[redacted]

SUPREME COURT OF THE UNITED STATES

October Term, 1963

No. 308

UNITED STATES, APPELLANT,

v.

PENN-OLIN CHEMICAL COMPANY, ET AL.

APPEAL FROM THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

PROBABLE JURISDICTION NOTED DECEMBER 9, 1963

[redacted]

SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1963

No. 503

UNITED STATES, APPELLANT,

vs.

PENN-OLIN CHEMICAL COMPANY, ET AL.

APPEAL FROM THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

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377—Olin Interrogatories and answers Nos. 1, 5 and 66 and Pennsalt Interrogatories and answers Nos. 1, 5 and 47—Personnel (excerpts)	1402	928
378—Olin Interrogatories and answers Nos. 8 and 52—Chlorine Dioxide Processes and Installation (excerpts)	1416	937
379—Interrogatory No. 16—Pennsalt and Penn-Olin answers—Origin of raw materials	1420	940
Pennsalt Interrogatory No. 45 and answer—Treatment of Penn-Olin in Pennsalt Financial Statement (excerpts)	1421	941
382—Pennsalt Interrogatory No. 82—Pennsalt sodium chlorate Productive capacity (excerpts)	1422	942
385—Pennsalt Interrogatory 84—Pennsalt's Sales in the Southeast	1423	942
386—Olin Interrogatory and answer No. 76—Olin salesmen selling or soliciting sales of sodium chlorate	1427	944
387—Olin Interrogatory 13—Sodium Chlorate purchased from Pennsalt and Consumed by Olin	1429	945
389—Olin Interrogatory and answer No. 80—Olin's new capital investment projects in inorganic chemicals	1431	946
391—Olin Interrogatory and answer No. 27—Pennsalt competitors in hydrofluoric acid and calcium hypochlorite	1432	946
392 A and B—Excerpts from deposition of William P. Drake	1433	948
392 C—Excerpts from pretrial oral examination of William P. Drake	1643	1084
393—Excerpts from deposition of Fred C. Shanaman—direct	1689	1105
—cross	1765	1147
—redirect	1769	1149

	Original	Print
Record from the United States District Court for the District of Delaware—Continued		
Plaintiff's Exhibits—Continued		
394—Excerpts from pretrial oral examination of Albert H. Clem	1772	1151
396—Excerpts from deposition of William Cooper Willits	1784	1157
397—Excerpts from oral deposition of George T. Collins	1792	1162
398—Excerpts from deposition of James McWhirter—direct	1813	1171
—cross	1834	1181
399—Excerpts from pretrial oral examination of George Davidson Grogan	1837	1182
400—Excerpts from deposition upon oral examination of Hugh C. Land—direct	1860	1192
401—Excerpts from deposition of William Cecil Gardiner—direct	1890	1208
402—Excerpts from deposition of Stanley de J. Osborne—direct	1927	1228
—cross	1953	1239
—redirect	1960	1242
403—Excerpts from deposition of Derek Richardson—direct	1964	1245
404—Excerpts from deposition of Dr. Norman O. Stein—direct	1978	1251
405—Excerpts from deposition of Cecil L. Williamson—direct	1992	1257
406—Excerpts from deposition of Dr. Bruno H. Wojcik—direct	2003	1262
407—Excerpts from deposition of Joseph Leonard Wood—direct	2139	1323
408—Excerpts from deposition of John O. Logan—direct	2193	1347
409—Excerpts from deposition of Russell Hopkinson—direct	2290	1401
410—Excerpts from deposition of James G. Johns—direct	2373	1437
411—Excerpts from deposition of Walter W. Northgraves—direct	2399	1447
412—Sodium Chlorate Data Stipulation, dated November 6, 1961 with Tables 1, 2, 3, 5, 6 & 7 attached	2437	1463
413—Nonchlorate stipulation, dated November 6, 1961 and Appendix A	2445	1471
414—General Stipulations, Set I (excerpts)	2450	1475
415—Memorandum from Peter Colefax to Board of Directors, subject, "New Sodium Chlorate Plant in Mississippi", dated February 12, 1957	2466	1484

Record from the United States District Court for the District of Delaware—Continued

	Original	Print
Plaintiff's Exhibits—Continued		
420—Extract from Management Committee Meeting No. 103, June 25, 1959 (Pennsalt)	2471	1490
422—Memorandum from Kennett Lewis to C. C. Hightower, dated August 28, 1959	2472	1491
424—Memorandum from M. T. Ramstad to R. T. Mills, dated April 29, 1960	2473	1492
426—Extract of Financial and Operating Policy Committee, Minutes of Meeting of September 27, 1960 (Olin)	2474	1493
427—Extract from Appropriations Committee Meeting No. 41, October 14 and November 3, 1960 (Pennsalt)	2475	1494
428—Memorandum from Corporate Staff to E. Block, subject, "Staff Comment on Chemicals Division Whither Report", dated October 14, 1960 (extract)	2477	1496
Defendants' Exhibits:-		
1—Memorandum from R. J. Eastman to R. W. Sloan, dated November 11, 1958	2485	1503
2—Memorandum from P. C. Staples to H. C. Land, dated August 15, 1960 with letter from Perkins McGuire, Asst. Secretary of Defense to Mr. Errol H. Karr, dated August 9, 1960	2486	1504
11—Extract from Appropriations Committee Meeting No. 12, held December 23, 1958	2489	1506
12—Memorandum by GTC (Collins) data entitled "Sodium Chlorate—Calvert City", dated August 23, 1956	2490	1507
13—Memorandum from W. C. Gardiner to B. H. Wojcik, dated March 26, 1957	2491	1508
14—Memorandum from W. L. Huntington to G. R. Evans, dated January 17, 1958 (excerpts)	2493	1509
15—Memorandum from G. R. Evans to A. S. Woodard, dated January 31, 1958	2494	1510
16—Memorandum from J. O. Logan to C. W. Frost, dated January 31, 1958	2495	1511
21—Memorandum from W. C. Gardiner to Dr. B. H. Wojcik, dated December 11, 1958	2496	1512
22—Memorandum from C. W. Frost to J. O. Logan, dated April 14, 1959	2498	1514
23—Letter from John O. Logan to L. M. Shanaman, dated April 21, 1959	2499	1515

	Original	Print
Record from the United States District Court for the District of Delaware—Continued		
DEFENDANTS' EXHIBITS—Continued		
24—Memorandum from K. C. Frazier to W. A. King, dated May 1, 1959	2500	1516
25—Memorandum from R. R. Shively to W. A. King, dated July 28, 1959	2501	1517
30—Memorandum from A. H. Clem to File, dated January 29, 1960	2502	1518
32—Memorandum from L. S. Howe to Russell Hopkinson, dated February 18, 1960	2504	1520
33—Memorandum from H. J. Reed to R. Hopkinson, dated March 8, 1960	2507	1523
36—Memorandum from C. L. Williamson to R. Hopkinson, dated April 25, 1960	2509	1524
40—Penn-Olin Estimated Earnings and Return on Investment, Revised July 27, 1960 to Include Resale Operations and Alternate Capitalization Plan (excerpt)	2520	1526
41—Memorandum from A. S. Woodard to J. McWhirter, dated August 16, 1960	2511	1527
42—Memorandum from H. J. Reed to S. de J. Osborne, Staff Coordinating Committee, CAR Committee, dated August 22, 1960	2513	1528
45—Memorandum from George H. Nusloch, II to J. L. Pickens, dated November 9, 1960	2522	1537
49—Plaintiff's answers to Interrogatories 1-4 (Set II)	2524	1539
Opinion, Steel, J.	2530	1543
Order entering judgment	2601	1590
Notice of appeal to the Supreme Court of the United States	2603	1591
Order of the United States District Court extending time to docket case	2606	1592
Order allowing certiorari	2608	1593

[fol. a]

IN UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

Civil Action No. 2282

UNITED STATES OF AMERICA, Plaintiff,

v.

PENN-OLIN CHEMICAL COMPANY, OLIN MATHIESON CHEMICAL CORPORATION, AND PENNSALT CHEMICALS CORPORATION, Defendants.

AMENDED COMPLAINT—Filed August 8, 1961

The United States of America, plaintiff, by its attorneys acting under the direction of the Attorney General of the United States, brings this civil action against the defendants named herein, and complains and alleges as follows:

I

Jurisdiction and Venue

1. This complaint is filed and this action is instituted against the defendants under Section 15 of the Act of Congress of October 15, 1914, c. 323, 38 Stat. 736, as amended, entitled "An Act to supplement existing laws against unlawful restraints and monopolies and for other purposes," commonly known as the *Clayton Act*, in order to prevent and restrain the continuing violation by the defendants, as hereinafter alleged, of Section 7 of the said Act, and under Section 4 of the Act of Congress of July 2, 1890, c. 647, 26 Stat. 209, as amended, entitled "An Act to protect trade and commerce against unlawful restraints and monopolies," commonly known as the *Sherman Act*, in order to prevent and restrain the continuing violation by the defendants, as hereinafter alleged, of Section 1 of said Act.

[fol. b] 2. The defendant Penn-Olin Chemical Company may be found within the District of Delaware.

II

Defendants

3. Penn-Olin Chemical Company, hereinafter referred to as Penn-Olin, is named a defendant herein. Penn-Olin is a corporation organized and existing under the laws of the State of Delaware and has its principal office in Wilmington, Delaware.

4. Pennsalt Chemicals Corporation, hereinafter referred to as Pennsalt, is named a defendant herein. Pennsalt is a corporation organized and existing under the laws of the Commonwealth of Pennsylvania and has its principal office in Philadelphia, Pennsylvania.

5. Olin Mathieson Chemical Corporation, hereinafter referred to as Olin Mathieson, is named a defendant herein. Olin Mathieson is a corporation organized and existing under the laws of the Commonwealth of Virginia and has its principal office in New York, New York.

III

Trade and Commerce

6. Olin Mathieson, a leading producer of chemicals and other products, is among the forty-one largest industrial corporations in terms of assets and the sixty largest industrial corporations in terms of sales in the United States. In 1959 it had assets approximating $839,000,000 and sales in excess of $700,000,000. Thirty-one percent of these sales, or about $218,000,000 were accounted for by Olin Mathieson's Chemicals Division. The plants in which Olin Mathieson produces its large variety of chemicals and chemical products are located in at least 22 states. Raw materials and ingredients destined for these plants, as well as the products which emanate from them, are purchased, distributed or sold in interstate commerce.

[fol. 6] 7. Pennsalt is one of the larger chemical companies in the United States. In 1959 it had assets in excess of $90,000,000 and sales of about $87,500,000. It manufactures close to 400 chemicals or chemical products for sale throughout the United States. Its plants are located in Alabama, California, Georgia, Iilinois, Kentucky, Michigan, Ohio,

Oregon, Pennsylvania, Texas and Washington. Raw materials and ingredients destined for these plants, as well as the products which emanate from them, are purchased, distributed or sold in interstate commerce.

8. Olin Mathieson and Pennsalt compete in the production and sale of at least seven important chemicals: ammonia, calcium hypochlorite, caustic soda, chlorine, hydrofluoric acid, muriatic acid and sulfuric acid. In 1958 out of approximately $600,000,000 in sales of these chemicals throughout the United States, the combined sales of Olin Mathieson and Pennsalt exceeded $80,000,000 or 13%. Olin Mathieson's volume is greater than Pennsalt's on some of the competitive products and less on others. In 1959, Olin Mathieson's sales of these products approximated $60,000,000 while Pennsalt's were about $30,000,000.

9. Pennsalt produces, and both it and Olin Mathieson sell sodium chlorate, a chemical widely used for industrial, agricultural and defense purposes. Sodium chlorate, produced by the electrolysis of an acidified salt solution, is distributed and sold through channels of interstate commerce throughout the United States. The largest consumer of sodium chlorate is the pulp and paper industry which uses it increasingly in the bleaching of pulp for brighter, higher quality paper. For this purpose, almost 40% of the sodium chlorate produced in the United States is consumed in the generation of chlorine dioxide, a gas which possesses the unique ability to bleach cellulosic fibers to maximum whiteness with little or no loss of fiber strength. Large quantities [fol. d] of sodium chlorate also go into the manufacture of herbicides, the preparation of agents for the defoliation of cotton and soybeans, and the production of other important chlorates and perchlorates. The latter groups include potassium chlorate, a standard ingredient in the manufacture of matches, and ammonium perchlorate, an important chemical used as an oxidizer in solid propellant fuels for rockets and missiles. The rapidly increasing demand for ammonium perchlorate has made its production the second most significant use of sodium chlorate and is widely believed to offer the greatest growth potential for sodium chlorate consumption.

10. The sodium chlorate industry is highly concentrated: American Potash and Chemical Corporation, with plants

in Nevada and Mississippi, Hooker Chemical Corporation, with plants in Mississippi and at Niagara Falls, New York, and Pennsalt with a plant at Portland, Oregon, presently account for virtually all of the sodium chlorate produced in the United States. The same three producers, or companies owned by them, also account for all of the potassium chlorate and virtually all of the ammonium perchlorate produced here. In 1959, Pennsalt accounted for about 14% of the 88,300 tons of sodium chlorate, valued at approximately $14,500,000, produced in the United States. In 1960, as a result of the expansion of its Portland plant, Pennsalt's production has risen to approximately 18% of the country's total. Pennsalt's sales of sodium chlorate currently exceed 14,000 tons or $2,000,000 annually. The balance of its output is consumed in the manufacture of other products.

11. Olin Mathieson is Pennsalt's leading customer for sodium chlorate, currently buying at a rate exceeding 3,000 tons per year. Its purchases represented about 11% of Pennsalt's sodium chlorate sales in 1958, 12% in 1959 and 21% in the first six months of 1960. All of the Pennsalt sodium chlorate bought by Olin Mathieson is resold to oth-[fo]. e] ers. In addition, Olin Mathieson has been a substantial customer for sodium chlorate produced by Hooker Chemical Corporation. Olin Mathieson presently purchases, for use or resale, over 6% of all the sodium chlorate sold in the United States.

12. Olin Mathieson also occupies a leading position in the technology of sodium chlorate applications. Apart from research and production activities in solid propellant rocket fuels and the ownership of patents relating to the production of perchlorates, Olin Mathieson owns the patented Mathieson process, the most widely used system in the United States for generating chlorine dioxide from sodium chlorate for pulp and paper bleaching purposes. As of February 1960, Olin Mathieson's process was reported as being used in more than 20 of about 55 chlorine dioxide generation plants in North America.

13. On February 11, 1960, Olin Mathieson and Pennsalt entered into a joint venture agreement providing for the creation of Penn-Olin Chemical Company. The agreement provides that (a) each of the joint venturers is to own 50% of the stock of Penn-Olin; (b) Penn-Olin is to construct a

plant at Calvert City, Kentucky, with a capacity of 25,000 tons of sodium chlorate per year, expected to cost approximately $6,500,000, and to be located on land deeded by, and adjacent to existing facilities of Pennsalt; (c) Olin Mathieson will act as sales agent for Penn-Olin; and (d) Pennsalt and Olin Mathieson will disclose to Penn-Olin all technical and operating information relating to the operations or contemplated operations of Penn-Olin which either party possesses or may develop prior to December 31, 1964.

14. On February 25, 1960, Penn-Olin Chemical Company was incorporated under the laws of the State of Delaware. Penn-Olin is authorized to engage in the production, distribution and sale of chemicals and chemical compositions of [fol. f] any state, form, nature, mixture or description, including sodium chlorate, potassium chlorate and perchlorates. The raw materials for Penn-Olin's production are found in large part outside Kentucky, and Penn-Olin's chemical products are destined for distribution and sale to customers located in various states of the United States. Beginning at least in 1960, Olin Mathieson commenced soliciting customers and entering into contracts for the purchase or sale of sodium chlorate for the account of Penn-Olin.

15. Subsequent to the formation of Penn-Olin, the stock of the corporation, totaling 2,000 shares designated as common stock, was authorized to be issued in equal shares to Pennsalt and Olin Mathieson. In April 1960 one share each of said stock was issued to Pennsalt and Olin Mathieson. Thereafter, from time to time and continuing at least until March 1961, Pennsalt and Olin Mathieson each subscribed, paid for and acquired additional shares of stock in Penn-Olin. In addition, officers and directors of Penn-Olin have been appointed from among the personnel of Pennsalt and Olin Mathieson. Among such officers and directors are the General Manager of the Industrial Chemicals Division of Pennsalt, appointed to serve also as President and a director of Penn-Olin; and the Vice President and Associate General Manager of the Chemicals Division of Olin Mathieson, appointed to serve also as Vice President and a director of Penn-Olin.

16. (a) The effect of the concurrent acquisitions of part of the stock of Penn-Olin by Pennsalt and Olin Mathieson

may be substantially to lessen competition or to tend to create a monopoly in the production and sale throughout the United States or certain sections thereof of sodium chlorate and of such other chemical products sold in com- [fol. g] merce as are or may be manufactured by either defendant, in violation of Section 7 of the Clayton Act, as more fully described in paragraph 18.

(b) By the creation of Penn-Olin, Pennsalt and Olin Mathieson each acquired, directly or indirectly, part of the assets of the other. The effect of such acquisitions may be substantially to lessen competition or to tend to create a monopoly in the production and sale throughout the United States or certain sections thereof of sodium chlorate and of such other chemical products sold in commerce as are or may be manufactured by either defendant, in violation of Section 7 of the Clayton Act, as more fully described in paragraph 18.

17. (a) Beginning at least as early as December 1957, the exact date being unknown to the plaintiff, Pennsalt and Olin Mathieson have engaged in a combination and conspiracy in unreasonable restraint of trade and commerce in sodium chlorate and derivatives thereof in violation of Section 1 of the Sherman Act. The combination and conspiracy has consisted of a continuing agreement and concert of action to avoid and eliminate competition *inter sese* in the production and sale of sodium chlorate and derivatives thereof throughout the United States, the substantial terms of which have been and are that said defendants would (1) allocate markets for the sale of sodium chlorate and (2) refrain from establishing facilities for the production of sodium chlorate and derivatives thereof without consulting each other.

(b) The contract by which Pennsalt and Olin Mathieson undertook to establish Penn-Olin, and the combination in which defendants have pooled their respective resources, [fol. h] as described in paragraphs 13 through 15, are in unreasonable restraint of trade and commerce in the production and sale of sodium chlorate and of other chemicals or chemical products produced by either defendant, in violation of Section 1 of the Sherman Act.

V

Effects of Violations

18. The foregoing violations have had and may have the following effects, among others:

(a) Potential competition between Olin Mathieson and Pennsalt in the production of sodium chlorate has been eliminated;

(b) Actual and potential competition between Olin Mathieson and Pennsalt in the sale of sodium chlorate has been eliminated;

(c) Competition generally in the production and sale of sodium chlorate may be substantially lessened;

(d) Concentration in the sodium chlorate industry, and in the allied fields of chlorate and perchlorate chemicals, will be preserved and barriers to the entry of newcomers will be enhanced;

(e) Olin Mathieson will be eliminated as an independent customer for sodium chlorate manufactured by competitors of Pennsalt;

(f) Actual and potential competition between Olin Mathieson and Pennsalt in the production and sale of various chemicals and chemical products may be substantially lessened;

[fol. i] (g) Suppliers of Olin Mathieson and Pennsalt may be placed at a competitive disadvantage in attempting to furnish raw materials or ingredients which either Pennsalt or Olin Mathieson can sell to the other;

(h) Consumers will be denied the benefits of free and unrestricted competition in the production and sale of chemicals and chemical products generally;

(i) Competitors in the chemical industry and in other industries may be encouraged to participate in joint ventures as a means of avoiding, lessening, restraining or suppressing competition *inter sese*.

19. The violations alleged in the foregoing paragraphs, as well as the effects of those violations, are continuing and will continue unless the relief prayed for in this complaint is granted.

Prayer

Wherefore, plaintiff prays:

1. That Olin Mathieson, Pennsalt and Penn-Olin be adjudged to have violated Section 7 of the Clayton Act.

2. That Olin Mathieson, Pennsalt and Penn-Olin be adjudged to have violated Section 1 of the Sherman Act.

3. That the contract, combination, conspiracy and joint venture of Pennsalt and Olin Mathieson be dissolved under such terms and conditions as the Court may direct and that Pennsalt and Olin Mathieson each be enjoined and restrained from acquiring any ownership, interest in, or distributing any substantial portion of the sodium chlorate of, any other company engaged in the production of sodium chlorate in the United States.

4. That defendants and all persons acting on their behalf be enjoined and restrained from taking any action in furtherance of the joint venture or the agreement of February 11, 1960.

[fol. j] 5. That Pennsalt and Olin Mathieson, and all persons acting on their behalf, be enjoined and restrained from entering into or continuing any joint venture agreement, arrangement or understanding with each other, except with the approval of the Court.

6. That a preliminary injunction issue against defendants, their representatives and agents, to prevent and restrain them from proceeding jointly with the construction or operation of Penn-Olin's plant and facilities, or with the carrying out of any other provisions of their agreement, pending final adjudication of the merits of this complaint.

7. That pursuant to Sections 12 and 15 of the Clayton Act orders be made and entered requiring Olin Mathieson and Pennsalt to be brought before the Court in this proceeding and directing the Marshals of the Southern District of

New York and the Eastern District of Pennsylvania respectively to serve summons upon those defendants.

8. That the plaintiff have such other and further relief as this Court may deem just and proper.

9. That the plaintiff recover the costs of this suit.

Certificate

This is to certify that the foregoing Amended Complaint sets forth the Complaint filed herein on January 6, 1961, as amended pursuant to order of the Court entered July 17, 1961 granting Plaintiff's Application Under Rule 15(a) For Leave to Amend Complaint.

/s/ Daniel J. Freed, /s/ Edward A. Copley, Attorneys, Department of Justice.

[fol. k] [File endorsement omitted.]

[fol. l] In United States District Court for the District of Delaware

Civil Action No. 2282

Answer to Amended Complaint—Filed September 5, 1961

Defendant Olin Mathieson Chemical Corporation, for its answer to the amended complaint herein:

1. Denies each and every averment of paragraph 1 thereof, except that the complaint purports to be filed and the action purports to be instituted under the statutes referred to and for the purposes stated.

2. States that it is without knowledge or information sufficient to form a belief as to the truth of each and every averment of the first and fourth sentences of paragraph 6 thereof, except that it is a producer of chemicals and other products and produces a variety of chemicals and chemical products in plants in 15 states.

3. States that it is without knowledge or information sufficient to form a belief as to the truth of each and every averment of paragraph 7 thereof, except that Pennsalt manufactures chemicals and chemical products and has a plant in Kentucky and a plant in Oregon.

4. States that it is without knowledge or information sufficient to form a belief as to the truth of each and every averment of paragraph 8 thereof, except that Pennsalt and Olin Mathieson produce and sell ammonia, calcium hypo- [fol. m] chlorite, caustic soda, chlorine, hydrofluoric acid, muriatic acid and sulfuric acid, and that in 1959 Olin Mathieson's aggregate sales of those products approximated $60,000,000.

5. States that it is without knowledge or information sufficient to form a belief as to the truth of each and every averment of paragraph 9 thereof, except that Pennsalt produces and Pennsalt and Olin Mathieson sell sodium chlorate, that some sodium chlorate has been used for industrial and agricultural purposes, that sodium chlorate can be produced by electrolysis of a acidified salt solution, that some sodium chlorate has been distributed and sold through channels of interstate commerce, that some sodium chlorate has been consumed by the pulp and paper industry in the bleaching of pulp for paper, that some sodium chlorate has been consumed in the generation of chlorine dioxide (a gas which can bleach celluiosic fibers), that some sodium chlorate has gone into the manufacture of some herbicides, the preparation of some agents for the defoliation of cotton and soybeans and the production of some other chlorates and perchlorates (including potassium chlorate, which can be used as an ingredient in the manufacture of matches, and ammonium perchlorate, which can be used as an oxidizer in solid propellant fuels for rockets and missiles).

6. States that it is without knowledge or information sufficient to form a belief as to the truth of each and every averment of paragraph 10 thereof, except that the three corporations referred to have plants in the cities and states named and account for a large part of the sodium chlorate produced in the United States.

[fol. n] 7. States that it is without knowledge or information sufficient to form a belief as to the truth of each and

every averment of paragraph 11, except that it has purchased sodium chlorate from Pennsalt and from Hooker Chemical Corporation, that in 1960 it purchased more than 3,000 tons of sodium chlorate from Pennsalt and that it has resold substantially all of the sodium chlorate it has purchased from Pennsalt.

8. States that it is without knowledge or information sufficient to form a belief as to the truth of each and every averment of paragraph 12 thereof, except that it has certain patents relating to the production of perchlorates, that it has developed a process for generating chlorine dioxide from sodium chlorate for pulp and paper bleaching purposes and that, as of February of 1960, that process was being used to generate chlorine dioxide in plants in North America.

9. Denies each and every averment of paragraph 13 thereof, except admits that it and Pennsalt entered into a letter agreement dated February 11, 1960; defendant respectfully refers the Court to said letter for the contents thereof.

10. Denies each and every averment of the second and fourth sentences of paragraph 14 thereof, except admits that Penn-Olin is authorized to engage in the production, distribution and sale of sodium chlorate and that in 1960 Olin Mathieson entered into contracts for the purchase of and solicited customers for the sale of sodium chlorate.

11. Denies each and every averment of the first, second, third and fifth sentences of paragraph 15 thereof, except admits that in March 1960 Penn-Olin issued to [fol. 9] Pennsalt and Olin Mathieson one share of common stock each and that among the officers and directors of Penn-Olin are the General Manager of the Industrial Chemicals Division of Pennsalt, appointed to serve also as President and a director of Penn-Olin, and the Vice President and General Manager of the Chemicals Division of Olin Mathieson, appointed to serve also as Vice President and a director of Penn-Olin.

12. Denies each and every averment of paragraphs 16 and each of its subdivisions, 17 and each of its subdivisions, 18 and each of its subdivisions and 19 thereof.

Wherefore, defendant Olin Mathieson Chemical Corporation demands judgment dismissing the amended complaint herein.

September 5, 1961.

Berl Potter & Anderson, by Wm. S. Potter, a member of said firm, Attorneys for defendant Olin Mathieson Chemical Corporation, Delaware Trust Building, Wilmington 1, Delaware.

Cravath, Swaine & Moore, 15 Broad Street, New York 5, New York. Of Counsel.

[fol. p] Acknowledgments of service (omitted in printing.)

[File endorsement omitted.]

[fol. q] IN UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

Civil Action No. 2282

[Title omitted]

ANSWER OF DEFENDANT PENN-OLIN CHEMICAL COMPANY TO PLAINTIFF'S AMENDED COMPLAINT—Filed September 6, 1961

Defendant Penn-Olin Chemical Company makes the following answer to plaintiff's amended complaint:

1. Penn-Olin denies that it has violated section 7 of the Clayton Act, 15 U.S.C. section 18 or section 1 of the Sherman Act, 15 U.S.C. section 1.

2, 3, 4, 5. Admitted.

6, 7, 8, 9, 10, 11, 12. The allegations contained in paragraphs 6 through 12 of the amended complaint do not relate to Penn-Olin.

13. Penn-Olin admits that on February 11, 1960 Olin Mathieson Chemical Corporation and Pennsalt Chemicals

Corporation entered into a joint venture agreement, which agreement speaks for itself.

14. Penn-Olin admits the allegations contained in the first and second sentences of paragraph 14 of the amended complaint. The allegations contained in the third sentence of paragraph 14 are denied as stated. Penn-Olin alleges that it is intended that Penn-Olin will only produce sodium chlorate, which will be sold principally in the Southeastern United States. Penn-Olin admits that in 1960 Olin Mathieson entered into contracts for the purchase of, and solicited customers for the sale of, sodium chlorate.

[fol. r] 15. Penn-Olin admits that in April 1960 one share of the common stock of Penn-Olin was issued to Pennsalt and one share to Olin Mathieson; that the officers and directors of Penn-Olin include the General Manager of the Industrial Chemicals Division East of Pennsalt, appointed to serve also as President and a director of Penn-Olin, and the Vice President and General Manager of the Chemicals Division of Olin Mathieson, appointed to serve also as Vice President and a director of Penn-Olin. The remaining allegations of paragraph 15 of the amended complaint are denied.

16, 17, 18, 19. Denied.

Berl, Potter & Anderson, By Wm. S. Potter, Attorney for Defendant, Penn-Olin Chemical Company.

[fol. s] Acknowledgment of service (omitted in printing.)

[File endorsement omitted.]

[fol. t] IN UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

Civil Action No. 2282

[Title omitted]

ANSWER OF DEFENDANT PENNSALT CHEMICALS CORPORATION TO PLAINTIFF'S AMENDED COMPLAINT—Filed September 6, 1961.

Defendant Pennsalt Chemicals Corporation makes the following answer to the amended complaint:

1. Pennsalt denies that it has violated section 7 of the Clayton Act, 15 U.S.C. section 18 or section 1 of the Sherman Act, 15 U.S.C. section 1.

2, 3, 4. Admitted.

5, 6. The allegations contained in paragraphs 5 and 6 of the amended complaint do not relate to Pennsalt.

7. Admitted.

8. Pennsalt admits that Olin Mathieson Chemical Corporation and Pennsalt produce and sell the seven chemicals set forth in paragraph 8 of the complaint and that Pennsalt's sales of these seven chemicals in 1958 approximated $29,000,000 and in 1959 approximated $31,000,000. Pennsalt is without knowledge or information sufficient to form a belief as to the truth of the remaining allegations contained in paragraph 8 of the amended complaint.

9. Pennsalt admits the allegations contained in the first sentence of paragraph 9 of the amended complaint. Penn- [fol. u] salt admits that sodium chlorate is produced by the electrolysis of an acidified salt solution; that sodium chlorate is distributed and sold through channels of interstate commerce in several markets in the United States; that the pulp and paper industry is a large consumer of sodium chlorate; that the pulp and paper industry uses sodium chlorate in the bleaching of pulp for brighter, higher quality paper; that sodium chlorate is also used in the manufacture of herbicides, the preparation of agents for defoliation of cotton and soy beans and the production of certain chlorates and perchlorates, including potassium

chlorate and ammonium perchlorate; that potassium chlorate is used in the manufacture of matches; and that ammonium perchlorate is used as an oxidizer in solid propellant fuels for rockets and missiles. Pennsalt is without knowledge or information sufficient to form a belief as to the truth of the remaining allegations contained in paragraph 9 of the amended complaint.

10. Pennsalt admits that American Potash and Chemical Corporation produces sodium chlorate in Nevada and Mississippi; that Hooker Chemical Corporation produces sodium chlorate in Mississippi and at Niagara Falls, New York; that Pennsalt produces sodium chlorate at Portland, Oregon; that American Potash, Hooker and Pennsalt produce sodium chlorate and potassium chlorate; that American Potash and Pennsalt produce ammonium perchlorate; that Pennsalt produced at its plant in Portland, Oregon, about 12,384 tons of sodium chlorate in 1959 and about 16,529 tons in 1960; that Pennsalt's sales of sodium chlorate in 1960 were 15,559 tons or about $2,394,200; and that [fol. v] the balance of Pennsalt's output of sodium chlorate is consumed in the manufacture of other products. Pennsalt is without knowledge or information sufficient to form a belief as to the truth of the remaining allegations contained in paragraph 10 of the amended complaint.

11. Pennsalt admits that Olin Mathieson purchased 3,203 tons of sodium chlorate from Pennsalt in 1960. Pennsalt admits the allegations contained in the second sentence of paragraph 11 of the amended complaint. Pennsalt is without knowledge or information sufficient to form a belief as to the truth of the remaining allegations contained in paragraph 11 of the amended complaint.

12. The allegations contained in paragraph 12 of the amended complaint do not relate to Pennsalt.

13. Pennsalt admits that on February 11, 1960 Olin Mathieson and Pennsalt entered into a joint venture agreement, which agreement speaks for itself.

14. Pennsalt admits the allegations contained in the first and second sentences of paragraph 14 of the amended complaint. The allegations contained in the third sentence of paragraph 14 of the amended complaint are denied as stated. Pennsalt alleges that it is intended that Penn-Olin Chemical Company will only produce sodium

chlorate, which will be sold principally in the Southeastern United States. The allegations contained in the fourth sentence of paragraph 14 of the amended complaint do not relate to Pennsalt.

15. Pennsalt admits that in April 1960 one share of the common stock of Penn-Olin was issued to Pennsalt and one share to Olin Mathieson; that the officers and directors of Penn-Olin include the General Manager of the Industrial Chemicals Division East of Pennsalt, appointed to serve [fol. w] also as President and a director of Penn-Olin, and the Vice President and General Manager of the Chemicals Division of Olin Mathieson, appointed to serve also as Vice President and a director of Penn-Olin. The remaining allegations of paragraph 15 of the amended complaint are denied.

16, 17, 18, 19. Denied.

Berl, Potter & Anderson, By Wm. S. Potter, Attorney for Defendant, Pennsalt Chemicals Corporation.

Barnes, Dechert, Price, Myers & Rhoads, By H. Francis DeLone, Of Counsel.

[fol. x] Acknowledgment of service (omitted in printing.)

[File endorsement omitted.]

[fols. 1-4] IN UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

C. A. No. 2282

UNITED STATES OF AMERICA, Plaintiff,

v.

PENN-OLIN CHEMICAL COMPANY, OLIN-MATHIESON CHEMICAL CORPORATION AND PENNSALT CHEMICALS CORPORATION, Defendants.

Transcript of trial hearings—October 30-November 22, 1961

Wilmington, Delaware, October 30, 1961.

Before: Hon. Edwin D. Steel, Jr., U.S. District Court Judge.

APPEARANCES:

For the Plaintiff: Alexander Greenfeld, Esq., U.S. District Attorney; Daniel J. Freed, Esq., and Edward A. Copley, Esq., of Department of Justice, Washington, D.C.

For all Defendants: William S. Potter, Esq., of Berl, Potter & Anderson.

For Defendant Pennsalt Chemicals Corp: H. Francis De Lone, Esq. & John T. Subak, Esq., of Barnes, Dechert, Price, Myers and Rhoads, of Philadelphia, Pa.

For Defendant Olin-Mathieson Chemical Corp.: Albert R. Connelly, Esq., & John Barnum, Esq., of Cravath, Swaine and Moore, of New York, N.Y.

. . . . . .

[fol. 5] STATEMENT OF MR. FREED

Mr. Freed: May it please the Court the United States brings to trial this morning an antitrust suit under Section 1 of the Sherman Act, and Section 7 of the Clayton Act, against Olin-Mathieson Chemical Corporation, Pennsalt Chemical Corporation, and their joint creation, Penn-Olin Chemical Company.

This case involves an agreement not to compete between

Olin and Pennsalt, and it involves a combination, namely, Penn-Olin Chemical Company, created by Olin and Pennsalt, to achieve that agreement.

In terms of chronology, the case may be divided into two parts. The first is a case under section 1 of the Sherman Act, dating back at least to 1957, which charges that Olin and Pennsalt entered into an agreement not to compete in sodium chlorate. The second part of the case begins in 1960. It is brought under both Section 1 and Section 7, and charges that the joint venture entered into on February 1, 1960 violates the antitrust laws in two different but related respects. One respect concerns sodium chlorate and its derivatives, the same subject which was covered by the 1957 agreement.

The second part deals with non-chlorate chemicals, and by non-chlorate chemicals the Government refers to those [fol. 6] products in which Pennsalt and Olin were vigorous, active competitors, in production and sale, prior to the creation of Penn-Olin Chemical Company.

The distinction between the non-chlorate chemicals and sodium chlorate is that prior to 1960 Pennsalt was a manufacturer and seller of sodium chlorate; Olin was only a seller. Prior to 1960 and continuing to the present time, Pennsalt and Olin competed to the extent of many millions of dollars in the sale of basic industrial chemicals, such as chlorine, caustic soda, ammonia, hydrofluoric acid and calcium hydrofluoric.

The charges which relate to the 1960 joint venture agreement are made under both Section 1 of the Sherman Act and Section 7 of the Clayton Act. They both deal with both chlorate and non-chlorate chemicals. The only difference which we urge for the Court's consideration between the attack on the joint venture under Section 1 and the attack under Section 7 is that the Clayton Act, being a statute designed to halt in their incipiciency combinations among competitors, imposes a lesser burden of proof on the Government.

The Government believes that the evidence which it will offer is adequate to establish violations of Section 1. [fol. 7] The Section 7 count is added because we believe that that statute is a fortiori violated. To whatever extent the proof does not meet the standards of Section 1,

we believe that a lesser burden is imposed upon the Government if the formal requirements of Section 7 are satisfied.

The presentation of the case for the United States will basically portray the anatomy of a joint venture. It is the Government's intention to trace back to its origin the creation of Penn-Olin Chemical Company by establishing the activity and the interest and the capability of Pennsalt and of Olin to have entered the sodium chlorate business independently, each by itself.

After establishing the interest and ability of each defendant individually to have engaged in this business, the Government will then demonstrate the manner in which the two combined, in which they agreed not to compete and in which they formed a joint venture as a means of consummating their non-competing agreement insofar as sodium chlorate is concerned.

[fol. 8] The evidence which the Government will introduce or offer for the Court's consideration may be divided into three categories as follows: One portion of our evidence will be designed to show that Pennsalt and Olin were each fully capable of competing by themselves.

Secondly, the same evidence, and perhaps additional evidence, will demonstrate that there were no barriers of technology, of capital, of political or other considerations, which foreclosed independent entry into the sodium chlorate business by a major industrial chemical company.

And, finally, we will show that the joint venture was entered into as a result of consideration by each company over a period of years of the alternatives, Shall we go it alone? Shall we go it together? Implicit, of course, there was always the possibility that each company might on its own, apart from combination, decide not to enter the business at all. With respect to the latter alternative we believe that the evidence will show that neither company had abandoned consideration of entry into sodium chlorate production prior to the time that the joint venture was agreed upon.

It is the Government's view as a matter of law that when substantial competitors in an industry are faced, or choose to face the alternatives of combination or competition, that that choice is an impermissible choice under the anti-
[fol. 9] trust clause, that combinations in restraint of trade

are unlawful, and that a company which is able to compete may not as an alternative choose not to compete.

I would like to state a few words about the nature of the sodium chlorate industry——

The Court: You would place some limitation on that last sentence. Every company which is capable of competing is not under Government compulsion to go into business. You simply say if they are going to go into business they must go into it competitively and not in a non-competitive manner?

Mr. Freed: Your Honor has correctly stated our position. And, further, on your Honor's point I might say that the Government does not take the position that the combination of any two companies to manufacture any product is per se unlawful or is on its face unreasonable and subject to challenge. Our concern in this case is with the choice which faced two companies which were substantial competitors in other chemical products and, in addition, substantial competitors in the desire and intention and ability to enter the particular business of Penn-Olin Chemical Company, sodium chlorate.

The sodium chlorate industry today has three producers, Pennsalt has been a producer and seller of sodium chlorate out of its plant in Portland, Oregon, since 1941. [fol. 10] Hooker Chemical Corporation acquired in the early fifties the Oldbury Electric Chemical Company, which at that time was engaged in the business of producing and selling sodium chlorate. So that today Hooker is the second company in the business. It is, I believe, the largest company in the business and it has expanded the facilities which it acquired by acquisition or merger from Oldbury.

The third company in the industry today is American Potash & Chemical Corporation. American Potash entered the sodium chlorate field in the middle fifties by acquiring Western Electrochemical Company. Prior to the institution of this lawsuit Pennsalt's only plant was in Portland, Oregon. Hooker's plants, acquired from Oldbury, were in Niagara Falls, New York, and Columbus, Mississippi. American Potash, at the time it acquired Western Electrochemical Company, acquired sodium chlorate productive facilities in Henderson, Nevada.

In 1958, American Potash by itself established a new

productive facility at Aberdeen, Mississippi. This was apparently the first new plant in the sodium chlorate industry in the decade of the fifties.

The joint venture agreement between the defendants Pennsalt and Olin was entered into in 1960, for the purpose of establishig a sodium chlorate productive facility in Calvert City, Kentucky. The plants of Hooker and American [fol. 11] Potash in Mississippi and of Penn-Olin in Kentucky represent productive facilities in the Southern or Southeastern portion of the United States. That area now has three plants. Hooker has one up in New York, American Potash in Nevada, and Pennsalt in Oregon.

Subsequent to the initiation of this lawsuit, Pittsburgh Plate Glass Company has announced that it will build a plant in Lake Charles, Louisiana, by itself.

Also subsequent to the initiation of this lawsuit, which occurred on January 6, 1961, with the filing of the Government's complaint, a fifth company, Pacific Engineering & Production Company, announced that it would construct sodium chlorate facilities in Henderson, Nevada. Pacific Engineering made that announcement as an independent company, without any indication of a joint venture.

The uses of sodium chlorate fall into several categories. The largest use which has grown very measurably in the decade of the fifties and continues to have a very bright outlook is for the bleaching of pulp and paper to maximum whiteness by a process which in contrast with previous bleaching processes does not materially impair the strength of the fiber as the bleaching takes place. It is therefore a method by which very bright pulp and paper can be made for industrial and commercial purposes without sacrificing the strength of the product.

[fol. 12] There are also substantial uses of sodium chlorate in the agricultural-chemical field, where it is used as a herbicide and for the purpose of defoliating cotton and soy beans.

Another use of sodium chlorate is in weed killing by railroads along their right-of-way.

A somewhat growing use is for uranium milling. This use takes place principally in the inter-mountain area in the west, or on the border between east and west, where the chemical is used to process uranium ores.

Finally, there are two principal derivatives of sodium chlorate. One, which is very old, is in the preparation from sodium chlorate of potassium chlorate, an essential ingredient in the making of matches. This use, while large, is stable. It is not an increasing or a decreasing use.

The remaining application of sodium chlorate is related directly to the nation's defense effort. Sodium chlorate, through a chemical process, is converted into ammonium perchlorate, used as an oxidizer in preparing solid propellant missile fuels. With the increase in the missile program, preparation for flights to the moon, it is possible [fol. 13] that in the years to come the demand for ammonium perchlorate will soar.

At the present time, Pennsalt, Hooker, American Potash and Pacific Engineering, are all engaged in the making of ammonium perchlorate. American Potash, Hooker and Pennsalt also make potassium chlorate.

The technology by which sodium chlorate is produced may be important to consider in any case where companies combine for the purpose of making a new product. The Government recognizes that in an age where the scientific barriers are being broken and where industrial genius is attempting to further push back the bounds of the unknown, it may sometimes be necessary for the research and development facilities, and for the capital investment of small individual companies, to be pooled in order to create new products that will benefit society and that will be useful in the public interest, and that perhaps may never come about without a partnership of capital and technology.

The evidence to be offered by the Government will indicate that sodium chlorate does not fall into this category. Substantial production of sodium chlorate goes back at least thirty years. A number of different companies have at one time or another been producers in this field.

The process by which sodium chlorate is produced. [fol. 14] is an electrochemical process, principally involving the electrolysis of salt in solution. The manufacture of chlorine and caustic soda, which are two of the fundamental industrial chemicals used by industry today, is an electrochemical process, and the relationship between the electrolysis of salt to produce those chemicals and

the electrolytic process by which sodium chlorate is produced is a close one.

The same general technical knowledge is applicable to both.

For many years many companies have, as I have stated, made sodium chlorate at one time or another. In addition to American producers, sodium chlorate has been produced abroad, and while imports have no significant application to this case, the importation of technology may.

There are a number of companies in Europe which have made known in the industry their availability to sell sodium chlorate production technology and know-how, to build plants, to give the benefits of their chemical experience with this product. For any new company to enter the sodium chlorate business, then, there are basically two alternatives. It may develop a process of its own, on the basis of prior experience in the electrochemical field, or it may acquire some know-how in technology from a com- [fols. 15-43] pany which has it available. The Government's evidence will indicate that technology in this case was available abroad and was sought by Olin prior to its decision to embark on the joint venture.

One of the advantages in not buying technology, in not merging with an already existing sodium chlorate producer, is an advantage which is inherent in our competitive system. Any company which seeks by itself to make a product which has been made before will always undertake to find newer and better ways to increase quality, to lower price, or to lower costs and increase profits. This case involves such attempts by Olin to achieve improved methods of producing sodium chlorate. These methods were cut short by Olin's entry into the joint venture agreement with Pennsalt. Pennsalt already had an established proven process for making sodium chlorate. It was therefore not necessary for Olin to continue with its own research and development efforts, and the Government will show evidence to indicate that what appeared to be a promising conquest of sodium chlorate technological problems was in hand, or in the forseeable future, at the time that Olin made its decision to drop its own production methods and go into a partnership with Pennsalt.

* * * * * * *

[fols. 44-128] Mr. Freed: I believe, your Honor, that the record will show that the Penn-Olin plant at Calvert City was constructed solely to produce sodium chlorate, and to the Government's knowledge there have been no further plans for expansion or new products reached at this time, and in this respect we call the Court's attention to the fact that the Government's inquiry concerning the joint venture came less than a month after the joint venture was created, and there has been no indication that products other than sodium chlorate, except for derivatives, have been the subject of decision or discussion.

[fol. 129] Wednesday, November 1, 1961, 10 o'clock a. m.

PRESENT:

For the Plaintiff: Daniel J. Freed, Esq., and Edward A. Copley, Esq.

For Defendant Pennsalt Chemicals Corp.: John T. Subak, Esq.

For Defendant Olin-Mathieson Chemical Corp.: John Barnum, Esq.

(The following occurred before the Clerk and the Court Reporter without the Court being present:)

OFFERS IN EVIDENCE OF PLAINTIFF'S EXHIBITS NOS. 1 THROUGH 414 (HEREINAFTER LISTED) AND COLLOQUY THEREON

Mr. Freed: Pursuant to order of the Court on the first day of trial, Monday, October 30, the Government this morning will offer into evidence the documentary portion of its case. Our submission includes documents culled from the files of the defendants, documents previously designated as exhibits to depositions, and documents tabulating data received from the defendants or third parties and not requiring live witness identification.

On Monday morning, November 6, plaintiff will offer into evidence its deposition evidence, interrogatory evidence, and stipulation evidence.

[fol. 130] On Monday afternoon plaintiff will commence

submission of the balance of its evidence through live witnesses.

In order to expedite this morning's proceedings, plaintiff has, at the suggestion of Mr. Pollard, marked each of the documents to be offered with the exhibit number, the Civil Action number, and today's date. The first exhibit is marked: "PX-1, C.A. 2282, 11-1-61". Approximately 400 exhibits are being offered.

We have also prepared a list describing these documents so that by simply recording this information into the transcript of this morning's hearing the Reporter will be able to make an accurate record of every exhibit which has been offered. Our list sets forth the following information: PX number; description of document; date of document; and deposition exhibit number, if any. For example, the list indicates that the following information should be recorded in the transcript for the plaintiff's second exhibit: "Plaintiff's Trial Exhibit PX-2, Northgraves to Wojcik, 5-8-56, Wojcik Deposition Exhibit 1".

Mr. Pollard, I believe that if the procedure I have outlined is in accordance with your suggestion and meets with your approval, the reception of plaintiff's exhibits in evidence, subject to later objections, if any, by defendants in their briefs, can be completed with initialing of each [fol. 131] exhibit by the Clerk.

Mr. Subak: I understand that defendants are thus free at a later date to make whatever objection, other than authenticity, they may wish to make. I did not understand that that objection was to appear in defendants' brief or briefs but would be in writing.

Mr. Freed: About all I can say as to objections is that the Court made a ruling on Monday, and I don't think that any of us here today can alter the Court's ruling or the Court's intent. I only know that today's hearing was designed only to offer exhibits into evidence, subject to later objection.

Mr. Subak: Subject to our review of the transcript, we do propose at a later date to make such objections as we may wish. We will do it in writing.

Mr. Barnum: Is it your suggestion that there is in the transcript of Monday's proceedings a reference by the Court

to the connection of objections to the documents and the brief which defendants are to file?

Mr. Freed: As I stated to Mr. Subak, I do not intend to in any way alter what Monday's transcript shows respecting the manner in which defendants may make their objections. The only purpose of this morning's hearing is to offer these exhibits into evidence, subject to later objec-
[fol. 132] tion by defendants.

Mr. Barnum: That is understood. I simply wish to call to your attention the fact that in your statement of what you believed to be the Court's ruling on Monday you said that defendants would object to documents in their briefs, an I do not understand that to have been the Court's ruling on Monday.

Mr. Freed: I think that does reflect our understanding of the Court's ruling, but certainly the transcript of the record will be the best evidence, and we do not intend to bind you to our interpretation of that by our following the procedure which I have outlined this morning.

Mr. Barnum: Would you cite to us that part of the transcript of the proceedings on Monday which connects defendants' objection to documents and defendants' brief?

Mr. Freed: Mr. Barnum, if you wish to take a recess we can discuss this——

Mr. Barnum: I think it is important.

Mr. Freed: I don't believe it is pertinent to this morning's proceedings.

Mr. Barnum: Not pertinent to this morning's proceedings but certainly it should be decided today when we should make these objections if it is your contention that they should be made at the same time as the defendants file
[fol. 133] their brief, which is of course Monday.

Mr. Freed: I am sorry. Excuse me. I did not by reference to "brief" have any reference to the trial brief which defendants are required to file on Monday. It was our understanding that the Court ruled that objections to evidence will be discussed in the post-trial briefs of the parties, not the brief submitted before trial, or, in the case of defendants, by next Monday.

Mr. Barnum: I then agree that this is not a subject which we need discuss right now.

(Discussion off the record.)

Mr. Freed: With the clarification in the record that plaintiff does not understand that defendants need make their objections in the brief by Monday, November 6th, plaintiff would now tender to the Reporter its list of the documents and tender to Mr. Pollard the entire set of documents so that as soon as this formal part of the hearing is recessed the initialing of documents and the transcription of documents and the examination of documents by the defendants may proceed.

(Discussion off the record.)

Mr. Freed: Mr. Pollard, I would like to have leave at the end of today's marking session to appear again before you and the Reporter and seek permission to remove from the Clerk's custody certain numbered exhibits which I [fol. 134] will read into the record in order that the plaintiff may have an opportunity to make copies of these documents. The purpose of this request would be to enable us to have copies of documents as to which we are submitting into evidence our only copy. Government counsel undertakes to return each exhibit which it will read off to the Reporter this afternoon to the Clerk's custody on Monday morning.

Would that be satisfactory, sir?

The Clerk: I assume the defendants have no objection to that?

Mr. Subak: I have none.

The Clerk: I shall discuss it with Judge Steel, who is the only person who could permit the withdrawal. I am quite sure if counsel acquiesce he will permit this withdrawal, and I will see that you get them.

(Further discussion off the record.)

Mr. Freed: Before we recess I would like to record an additional observation concerning the physical characteristics of the evidence being offered this morning.

In a number of instances the documents, virtually all of which are photostats or copies of defendants' original documents, contain or did contain red markings or other notations made by Government counsel. We have attempted in our offer this morning to remove all such markings. In [fol. 135] some instances we have met with only mixed suc-

cess. The markings were made at a time when it was understood that original documents or clean copies would be furnished by the defendants for trial. In a number of cases the Government has not been able to notify defendants or defendants have not been able to furnish such clean copies by this morning's hearing. In fairness to the defendants we believe that they should have the right to offer in substitution originals or clean copies for exhibits on which spurious markings appear.

It is therefore my suggestion, Mr. Pollard, that the defendants be accorded the privilege of substituting original documents or clean copies of documents upon prior notice to the Government or advance submission of the proposed substitute to the Government so that we will know which if any exhibits being offered today are being replaced.

Mr. Subak: Mr. Freed, as you know, we have given to you a large number of these clean copies at your request. We will review the documents which you are now proposing to put into evidence, and in those instances where we think that markings on them should not appear we will try and substitute clean copies.

The Clerk: Of course, any substitution will naturally be under the control of the Court again, and I am sure that with the acquiescence of counsel the Court will [fol. 136] permit the substitution of clean copies for less legible copies, or whatever they are.

Mr. Freed: One final remark. The parties are in the process this morning, and perhaps during the major part of today, of discussing certain statistical exhibits and stipulations. At the conclusion of our discussion it is the Government's intention to offer either stipulated exhibits or underlying data in the event stipulations do not materialize. Whether those offerings of documents which relate to stipulations take place this afternoon or Monday will depend upon the negotiations of the parties, but I would like the record to be clear that as to a small number of matters documents are not being offered this morning in the expectation that stipulations respecting them can be reached by the parties between now and the convening of our marking session on Monday morning.

I believe with that statement the record at this point may record the list of documents which is now in the process of being corrected by defense counsel so that the statement that goes to the Reporter will represent an agreed list of exhibits.

Mr. Barnum: Defense counsel's corrections at this time are restricted simply to clarifying the descriptions already offered and making corrections in the spellings of names. [fol. 137] It is not in any respect a correction of the list proffered by plaintiff on the basis of a comparison of the description with the document itself.

Mr. Freed: But it is our understanding, Mr. Barnum, that such a comparison between the list of documents which you are now reviewing and the documents themselves will take place this morning and this afternoon so that when the Reporter receives this list for incorporation into the record it will reflect a matching of the document itself against the description on the list. Is that correct?

Mr. Barnum: Since the Reporter is receiving it now, it will, when he receives it, not reflect such a matching. But it is understood that such a matching will take place today.

Mr. Freed: Then perhaps I should amend my statement to reflect that the list will be delivered to the Reporter when the defendants have had an opportunity to check it against the physical documents themselves.

[fol. 138]

Plaintiff's Trial Exhibits

PX No.	Description	Date	Dep. Ex. No.
1	Electrochemical Survey H-35 501	7-18-55	
2	Northgraves to Wojcik	5- 8-56	Wojcik 1
3	Hopkinson to Stein	7- 5-56	Stein 5
4	Logan to Hopkinson	7-18-56	Stein 8
5	Stein to Hopkinson	7-10-56	Stein 6
6	Hopkinson to Logan	7-13-56	Stein 7
7	Electochemical Survey H-35 502	7-26-56	Gardiner 3
8	Electrochemical Survey H-35 503	10-12-56	
9	Wojcik to Logan	11-20-56	
10	Market Research Report (Hayes)	12-56	
11	Electrochemical Survey H-35 504	3- 1-57	
12	Electrochemical Survey H-35 505	2-26-57	
13	Electrochemical Survey H-35 506	3- 6-57	
14	Logan to Wojcik	2-19-58	
14-A	Schiessl to Logan	3-27-58	
15	Whither Report	4- 4-58	Osborne 3 (Includes Hopkinson 1)
16	Engineering Survey H-35 701	4-29-58	

[fol. 139]

17	Gardiner to Wojcik	6-27-58	
18	Wojcik to Gardiner	7- 2-58	
19	Wojcik to Fodor	7- 2-58	
20	Olin Division Management Meeting	7-28-58	Wojcik 3
21	Collisson to Block	8- 4-58	
22	Harshman to Wojcik	8-19-58	
23	Fodor to Gardiner	10- 3-58	
24	Gardiner to Baker	11-12-58	
25	Electrochemical Survey H-35 507	12-11-58	
26	Wojcik to Collisson	1- 2-59	
27	Electrochemical Survey H-35 508	1- 9-59	
28	Sodium chlorate—Vickers-Krebs Gardiner memo)	2-11-59	
29	Wocik to Gardiner	2-16-59	
30	Newell to Logan	2-17-59	
31	Electrochemical Survey H-35 509	2-25-59	
32	Whither report	4-10-59	Osborne 1
33	Electrochemical Survey H-35 510	4-17-59	
34	Bellows to Osborne	4-23-59	Williamson 1
35	Nicolaisen to Spence	4-23-59	

[fol. 140]

Plaintiff's Trial Exhibits

PX No.	Description	Date	Dep. Ex. No.
36	Olin Division Management Meeting Minutes	4-27-59	
37	Theobald to Frazier	5- 1-59	
38	Thoman to Nicolaisen	5-22-59	
39	Electrochemical Survey U-2.501	7-15-59	
40	Frazier to King	7-27-59	
41	King to Logan	7-28-59	
42	Northgraves to Chalfant	8- 7-59	
43	Logan to King	8-12-59	
44	Olin Division Management Meeting Minutes	8-17-59	
45	Wojcik to Block	8-18-59	
46	Olin Division Management Meeting Minutes	8-31-59	
47	Stein to Burdeshaw	8-31-59	Stein 4
48	Thoman to Wojcik	9- 4-59	
49	Wojcik to Thoman	10- 5-59	
50	Thoman to Wojcik	10-26-59	
51	Wojcik to Thoman	11- 9-59	
52	Spence to Wojcik	11-10-59	
53	Nicolaisen to Wojcik	11-25-59	
54	Spence to Wojcik	1-14-60	
55	Wojcik to Spence	1-26-60	

[fol. 141]

56	Electrochemical Survey U-2.502	4-27-60	Gardiner 1
57	Whither Report	7-60	Osborne 2 and Hopkinson 8
58	Drake to Logan	5-22-53	
59	Logan to Drake	5-25-53	Drake 1
60	Drake to Logan with Chlorine Dioxide Agreement attached	7-31-53	Drake 2
61	Lucard to Mitchell	9-10-54	FCS 3
62	Woodard to Mitchell	9-16-54	
63	Wurst to Grogan	2- 2-55	Grogan 12 (ABC)
64	Drake to Woodard	2-18-55	Drake 4
65	Grogan to McDonald	2-25-55	Drake 5
66	Woodard to Drake	3- 8-55	Grogan 1
67	Drake to Land	3-23-55	Drake 6
68	Woodard to Grogan	4-28-55	Drake 7
69	Grogan to file	9-15-55	Grogan 10
70	Pennsalt Management Committee Meeting #40	7- 3-56	
71	Drake to F. C. Shanaman	12-17-56	Drake 10
72	F. C. Shanaman to Drake	12-20-56	Drake 11
73	Land to Drake	12-27-56	Drake 13
74	Willits to LaLande	1-22-57	Drake 14
75	F. C. Shanaman to More & Karr	1-22-57	

[fol. 142]

Plaintiff's Trial Exhibits

PX No.	Description	Date	Dep. Ex. No.
76	Drake to LaLande	2-21-57	Drake 16
77	Rice to Grogan	3- 6-57	
78	Grogan to Rice	3-11-57	
79	L. M. Shanaman to Grogan	3-26-57	
80	Grogan to Rice	4- 3-57	
81	Grogan teletype message with notes, 4-3-57	2-28-57	
82	LaLande to Drake	3-12-57	Drake 17
83	F. C. Shanaman to LaLande	3-26-57	Drake 18
84	Willits to file	3-27-57	Drake 20
85	Land to Willits	3-29-57	Drake 21
86	Messing to Eastman	4-18-57	
87	Adams (ADL) to Eastman	4-18-57	
88	Sloan to F. C. Shanaman	4-25-57	
89	Pennsalt Management Committee Meeting #59	4-26-57	
90	Adams (ADL) to Sloan	5- 8-57	
91	Wurst to Grogan	6-27-57	Grogan 11
92	L. M. Shanaman to Grogan and 8-19-57 Grogan to L. M. Shanaman	8-16-57	Grogan 3 (A & B)
93	Sloan to F. C. Shanaman with attachment	9-12-57	
94	Ramstad to F. C. Shanaman	9-24-57	
95	Logan to F. C. Shanaman	10- 7-57	

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96A	LaLande to Drake	10-16-57	
96B	Little Report	8-19-57	Drake 24
96C	Commercial Development Report	10-16-57	Drake 25
97	Land to Lawson	11- 8-57	Land 6
98	Grogan to Lawson	11-15-57	Grogan 4
99	Eastman to Sloan	11-18-57	FCS 7
100	LaLande to Drake and 11-19-57 Woodard to LaLande	11-19-57	
101	Olin Division Management Meeting Minutes	12- 2-57	Richardson 1 and Wojcik 2
102	Willits to file	12- 5-57	Drake 26
103	F. C. Shanaman to Logan	12-17-57	FCS 8
104	L. M. Shanaman to Richardson	12-17-57	LMS 1
105	Logan to F. C. Shanaman	12-19-57	FCS 9
106	F. C. Shanaman to Logan	12-19-57	
107	Lawson to Land	1- 7-58	
108	Land to Lawson	1- 8-58	Land 2
109	Logan to F. C. Shanaman	1-14-58	FCS 10
110	F. C. Shanaman to Logan	1-16-58	FCS 11
111	Logan to file	2- 4-58	Drake 27
112	Pennsalt Press Release	2- 5-58	Drake 48
113	PS-1391 (Pennsalt Press Release)	2-11-58	FCS 12 and Drake 51
114	(None.)		

[fol. 144]

Plaintiff's Trial Exhibits

PX No.	Description	Date	Dep. Ex. No.
115	Theobald to King	2-24-58	
116	Olin Bulletin # 1583	2-24-58	
117	Land to Lawson	2-25-58	Land 3
118	Theobald to Officer	2-27-58	
119	Willits to Drake	3-13-58	
120	Woodside to Shera	3-14-58	
121	LaLande to Drake	3-26-58	
122	Tuttle to file	4-22-58	
123	Theobald to L. M. Shanaman	5-22-58	LMS 6
124	Lawson to Land	5-28-58	Land 5
125	L. M. Shanaman to Theobald	5-28-58	
126	Tuttle to Dantin	6-11-58	
127	Logan to F. C. Shanaman	6-16-58	FCS 14
128	F. C. Shanaman to Logan	6-23-58	FCS 17
129	Logan to Frost	6-27-58	LMS 7
130	Land to Lawson	8- 1-58	Drake 28
131	F. C. Shanaman to Land	8- 5-58	FCS 13
132	Haines to LaLande	7- 1-58	
133	Land to F. C. Shanaman	9- 8-58	FCS 15
134	Land to Drake	9- 8-58	Drake 29
135	F. C. Shanaman to Land	9-10-58	FCS 16
136	Pennsalt Management Committee meeting # 88	9-11-58	

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137	Land to F. C. Shanaman	9-17-58	FCS 18
138	F. C. Shanaman to Land	9-22-58	FCS 19
139	Drake to Land and F. C. Shanaman	9-26-58	Drake 20
140	PS-1454 (Pennsalt Press Release)	10- 5-58	Drake 50
141	Pennsalt Management Committee Meeting # 89	10-13-58	
142	Drake to Land and F. C. Shanaman	10-17-58	FCS 20
143	Eastman to Sloan	10-29-58	Drake 31
144	Woodard to Lande	10-31-58	Drake 15
145	L. M. Shanaman to file	11- 3-58	
146	Eastman to Sloan	11-11-58	Drake 32
147	F. C. Shanaman to File	11-10-58	
148	Pennsalt Management Committee Meeting # 90	11-13-58	
149	Land to Sloan	11-19-58	Drake 3
150	Ramstad to More	12-31-58	
151	Pennsalt Management Committee Meeting # 93	1- 9-59	
152	Ramstad to F. C. Shanaman	1-16-59	
153	Tryson to Woodard	1-20-59	Land 7
154	Pennsalt Appropriations Committee Meeting # 15	1-29-59	LaLande 11
155	PS-1482 (Pennsalt Press Release)	2-10-59	Land 8

[fol. 146]

Plaintiff's Trial Exhibits

PX No.	Description	Date	Dep. Ex. No.
156	PS–1482 (Pennsalt Press Release)	2–10–59	Drake 49
157	Logan to McMullen	2–13–59	
158	Olin Division Management Meeting Minutes	2–16–59	Wojcik 4
159	Sloan to LaLande	2–25–59	
160	Logan to Drake	2–27–59	Drake 33
161	Drake to Logan	4– 3–59	Drake 34
162	Logan to Frost	4– 6–59	
163	Logan to Drake	4– 7–59	Drake 37
164	Pennsalt Management Committee Meeting # 99	4– 9–59	
165	LaLande to Drake	4–10–59	Drake 35
166	Drake to LaLande	4–20–59	Drake 40
167	Pennsalt Management Committee Meeting # 100	5– 8–59	
168	Olin Division Management Meeting Minutes	6– 8–59	
169	Olin Division Management Meeting Minutes	6–22–59	
170	Olin Division Management Meeting Minutes	7– 6–59	Wojcik 5
171	Pennsalt Management Committee Meeting # 104	7– 9–59	
172	Drake to Land and LaLande	11–17–59	Drake 41
173	Walker to Drake	12–14–59	Drake 42
174	Land to Drake	12–30–59	Drake 43

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175	Letter Agreement	2–11–60	Clem 1 and Willits 1
176	Penn-Olin Certificate of Incorporation	2–25–60	
177	Penn-Olin By-Laws		Williamson 1
178	Definitive Agreement (Draft)		Clem 2 and Willits 2
179	Sales Agreement (Seventh Draft)	3– 8–61	Clem 11
180	Service Agreement (Draft)		LaLande 10
181	Definitive Agreement (Conformed copy)	1– 2–61	
182	Sales Agreement (Conformed copy)	1– 2–61	
183	Service Agreement (Conformed copy)	1– 2–61	
184	Pennsalt Policy & Planning Committee Meeting # 1	1– 6–60	F. C. Shanaman 25
185	Block to Osborne	1–22–60	Osborne 4
186	Clem to File	1–25–60	Drake 44
187	LaLande to Drake	1–29–60	LaLande 8
188	McMullen to Williamson	1–29–60	Johns 3
189	Sloan to Clem	2– 1–60	Clem 5
190	Johns to File	2– 3–60	
191	"Minutes of Meeting"	2– 4–60	Williamson 14
192	Pennsalt Notes	Feb. '60	Drake 45
193	"Penn-Olin Chemicals (?) Corporation"	Feb. '60	Drake 46

[fol. 148]

Plaintiff's Trial Exhibits

PX No.	Description	Date	Dep. Ex. No.
194	Notes (Olin D73)	2- 4-60	
195	"Visit to Pennsalt Chemical Corporation"	2-25-60	
196	Clem to Drake	2- 5-60	Clem 6
197	Logan to Hopkinson with summary attached	2- 9-60	Hopkinson 2
198	Williamson notes, Penn-Olin C-6F	2-11-60	Williamson 15
199	Drake to File	2-12-60	
200	Drake to Board of Directors	2-12-60	
201	PS-1554 (Pennsalt Press Release)	2-15-60	
202	Grogan to all Salesmen	2-17-60	Grogan 7
203	Pennsalt Full Management Council Meeting # 1	2-18-60	
204	Clark to McWhirter with 2-23-60 Robison to Clark attached	2-24-60	
205	Woodard to McWhirter	2-26-60	
206	Grogan to McWhirter	2-29-60	Grogan 8(A-B)
207	Statz to Mayne	3- 4-60	
208	Johns to Logan	3- 7-60	
209	Tuttle to File	3- 9-60	
210	Hopkinson to Osborne	3- 9-60	Hopkinson 6
211	McWhirter to File	3-10-60	
212	Coombes to Monro-Warrior Coal & Coke Co.	3-17-60	

[fol. 149]

213	Johns to Grogan (and 2-18-60 Grogan to Logan)	3-21-60	Johns 8 & 8A
214	McWhirter to Gipson	3-23-60	
215	Grogan to Clem	3-23-60	Grogan 9
	Clem to Grogan	3-25-60	(A B C)
	Grogan to Clem	3-31-60	
216	Grogan to Clem	3-29-60	Grogan 13
	Clem to Grogan	4- 4-60	(A B)
217	Hagan to Johns	4- 5-60	
218	Woodside to Wilmot	4- 8-60	Northgraves 1
219	Karr to LaLande	4- 8-60	Gardiner 4
220	Pennsalt Appropriation Committee Meeting # 35	4-13-60	
221	Johns to Smith	4-19-60	
	Smith to Shively	4-18-60	Johns 13
	Smart Sales Report	4- 6-60	
222	Wetzel to Williams	4-19-60	
223	Johns to Phillips	4-20-60	
224	Pennsalt Full Management Council Meeting # 7	4-27-60	
225	McWhirter to Clem, et al	5- 2-60	Johns 9
226	Brandt to Johns	5- 6-60	
227	Williamson to Phillips	5-12-60	Clem 10 (also Williamson 7)
	Phillips to Williamson	5-11-60	Williamson 6
228	Johns to Cunningham	5-18-60	Johns 19
229	Pennsalt Appropriation Committee Meeting # 37	5-26-60	

[fol. 150]

Plaintiff's Trial Exhibits

PX No.	Description	Date	Dep. Ex. No.
230	Williamson to Williams	5-26-60	Williamson 9
231	Wetzel to Williams	5-23-60	Williamson 8
232	Brandt to Johns with attachments	6- 6-60	
233	Clem to Penfield	6-15-60	Clem 3
234	Clem to File	6-16-60	Land 11
235	Woodard to McWhirter	7- 6-60	
236	Land to Clem	7-11-60	Clem 9
237	LaLande to Wood	7-12-60	
238	Smith Sales Report	7-20-60	Johns 18
239	"Sodium Chlorate Market Survey (for Drummond)"	7-20-60	Johns 14
240	Wood to Logan	7-21-60	Wood 4
241	Woodard to McWhirter	7-26-60	
242	Dietrich to CAR Committee with attachment	7-28-60	Hopkinson 9
243	"CAR Committee Discussion"	7-29-60	Hopkinson 10
244	Pennsalt Appropriation Request: "Penn-Olin Chemical Company"	7-29-60	
245	Olin Special Meeting Minutes	8- 1-60	Hopkinson 11
246	Osborne's Handwritten Notes	8- 1-60	Osborne 5
247	Wood to Block	8- 2-60	
248	Hamstra to Osborne	8-10-60	
249	Watson to File	8-10-60	

[fol. 151]

250	Willits to O'Connell	8-19-60	Willits 12
251	Woodard to McWhirter	8-22-60	
252	Olin Minutes of Financial and Operating Policy Committee	8-24-60	
253	Olin Capital Appropriation Request (Single page)	8-29-60	Osborne 7
254	Olin Capital Appropriation Request (Booklet)	8-29-60	Wood 3
255	Wall Street Journal Extract	8-29-60	Osborne 6
256	Pilling to Marriott	8-30-60	
257	Pennsalt Appropriation Request: "Penn-Olin Chemical Company"	9- 1-60	Drake 38
258	Clem to Willits	9- 2-60	
259	Willits to Drake	9- 6-60	Drake 39
260	PS-1702 (Pennsalt News Release)	9- 6-60	
261	Tuttle to McWhirter	9- 7-70	
262	LaLande to Drake	9- 8-60	
263	Nicolaisen to Hightower	9-14-60	
264	McWhirter to Clem	9-16-60	Johns 20
265	Contract—Ampot-Olin Mathieson	9-20-60	
266	McMullen to O'Brien	9-21-60	Johns 6
267	Telegram, Lee to Block	9-22-60	Osborne 8
268	Dietrich to Present	9-23-60	
269	"Sodium Cholorate Sales Information" (McMullen)	9-26-60	Johns 11

[fol. 152]

Plaintiff's Trial Exhibits

PX No.	Description	Date	Dep. Ex. No.
270	McCullough to L. M. Shanaman	10- 3-60	
271	McWhirter to Logan	10- 7-60	
272	Willits to Crawford	10-11-60	
273	Williamson to O'Connell	10-13-60	Williamson 17
274	Olin Sodium Chlorate Market Appraisal and PO Marketing Projection		L. M. Shanaman 10
275	"Sodium Chlorate Consumption" (Olin—7 pages)		
276	Penfield to McWhirter	10-17-60	
277	Penfield & Gormally to McWhirter	10-17-60	
278	McWhirter to File	10-17-60	Willits 3
279	Nusloch to Wilmot	10-18-60	Johns 17
280	Willits to O'Connell	10-27-60	
281	Theobald to Johns	11-16-60	Johns 21
282	Penfield to Collins, LaLande, Land, Lawson, McWhirter, Willits	11-23-60	
283	Williams to Platt	11-29-60	
284	Genetive to Johns	12-13-60	Johns 22
285	Johns to Genetive	12-14-60	Johns 23
286	Garland to Kennedy	12-21-60	
287	Contract: Olin Mathieson—West Virginia Pulp & Paper Co.	12-22-60	Logan 3
288	Johns to L. M. Shanaman	12-30-60	Johns 12

[fol. 153]

289	Johns to L. M. Shanaman	12-30-60	L. M. Shanaman 8
290	L. M. Shanaman to Johns	1-10-61	L. M. Shanaman 9
291	McCoy to LaLande	1-16-61	
292	Chemical Week Extract	6- 3-61	Clem 4
293	Pennsalt Full Management Council Meeting No. 18	6-13-6-16-61	Drake 52
294	Minutes of First Meeting of Penn-Olin Board of Directors	3- 8-60	Williamson 13
295	Williamson to McWhirter	4-22-60	
296	McWhirter to Williamson	4-25-60	
297	Willits to Harrington	4-25-60	
298	Minutes of Quarterly Meeting of Penn-Olin Board of Directors	10-20-60	Williamson 11 Willits 7
299	Willits to O'Connell	11- 9-60	Willits 4
300	Bryce to Willits	11-11-60	
301	Tuttle to Williamson	11-22-60	
302	Willits to O'Connell	12-23-60	
303	Jackson to Willits	12-29-60	
304	Willits to Jackson	1- 3-61	
305	Tuttle to Williamson	1- 6-61	Williamson 4
306	Williamson to Willits	1- 9-61	
307	Willits to Williamson	1-10-61	
308	Williamson to Willits	1-13-61	

[fol. 154]

Plaintiff's Trial Exhibits

PX No.	Description	Date	Dep. Ex. No.
309	Jackson to Williamson	1-18-61	
310	Willits to O'Connell	2- 3-61	
311	Jackson to Willits	2- 9-61	
312	Willits to Bryce	2-10-61	
313	Tuttle to Williamson	2-17-61	
314	Willits to O'Connell	3-14-61	Willits 5
315	Jackson to Willits	3-21-61	
316	Tuttle to Williamson	3-23-61	Williamson 3
317	Penn-Olin Bank Statement	3-60	
318	Penn-Olin Bank Statement	4-60	
319	Penn-Olin Bank Statement	6-60	
320	Penn-Olin Bank Statement	11-60	
321	Penn-Olin Bank Statement	12-60	
322	Penn-Olin Bank Statement	1-61	
323	Penn-Olin Bank Statement	2-61	
324	Penn-Olin Bank Statement	3-61	
325	Penn-Olin Bank Statement	4-61	Williamson 16
326	Penn-Olin Bank Statement	5-61	
325	Penn-Olin Bank Statement	6-61	
328	Penn-Olin Financial Statement	4-11-60	
329	Penn-Olin Balance Sheet	4-30-60	
330	Penn-Olin Balance Sheet	5-31-60	

[fol. 155]

331	Penn-Olin Balance Sheet	10-31-60	
332	Penn-Olin Balance Sheet	11-30-60	
333	Penn-Olin Balance Sheet	12-31-60	
334	Penn-Olin Balance Sheet	1-31-61	
335	Penn-Olin Balance Sheet	2-28-61	
336	Mayne to Williamson	2-27-61	
337	Penn-Olin Sodium Chlorate Sales and Earnings	1-61	
338	Penn-Olin Sodium Chlorate Sales and Earnings	2-61	Logan 2
339	Pennsalt Capital Investment Policy No. 1		Drake 19
340	Net Return on Shareholders' Equity		Drake 12
341	Penfield to Drake with PSW-075-P attached	3- 1-56	Drake 8
342	Hagedorn to Shera	8-20-56	F. C. Shanaman 2
343	LaLande to Drake	11-20-56	Drake 9
344	Gardiner to Wojcik	11-26-56	Gardiner 2
345	(Grogan to Gooding	3- 4-57	Grogan 2-A
	(Teletype Messages 2-25-57;	3-4, 5-57	Grogan 2 B, C
	(Gooding to Pennsalt	2-25-57	Grogan 2-D
346	Land to LaLande	4- 4-57	Drake 22
347	F. C. Shanaman to LaLande	4-16-57	Drake 23
348	Shera to F. C. Shanaman	11-14-57	F. C. Shanaman 6
349	Richardson to L. M. Shanaman	2-12-58	L. M. Shanaman 2

[fol. 156]

Plaintiff's Trial Exhibits

PX No.	Description	Date	Dep. Ex. No.
350	Land to Lawson	5- 5-58	Land 4
351	F. C. Shanaman to Land	11-25-58	F. C. Shanaman 21
352	F. C. Shanaman to Drake	3-12-59	Drake 36
353	Tryson to Woodard	3-26-59	Land 10
354	Burdeshaw to Stein	7-16-59	Stein 1
355	Preston to Stein	7-20-59	Stein 2
356	Stein to Block	8- 3-59	Stein 3
357	Teletype re C &E News	8-18-59	Land 9
358	Logan to Johns	11-18-59	Johns 1
359	Johns to McMullen	12-10-59	Johns 2
360	McWhirter to Watson	4- 5-60	Clem 7
361	Clem to McWhirter	6-28-60	Clem 8
362	Olin Capital Appropriation Request (Booklet)	7- 7-60	Johns 24
363	Johns to Drummond	7-22-60	Johns 15
364	Logan to O'Connell	8-11-60	Osborne 9 Willits 13
365	McMullen to District Office Managers	11-30-60	Johns 25
366	Sodium Chlorate Cell with Platinized Titanium Anodes	12-14-60	
367	Pennsalt's Sodium Chlorate Customers (Exhibit 26-1)		Johns 10
368	Pennsalt's sodium chlorate distributors and their customer or other destinations (Ex. 26-2)		F. C. Shanaman 1

[fol. 157]

369	Pennsalt Annual Report	1957	
370	Pennsalt Annual Report	1959	
371	Olin-Mathieson Annual Report	1959	
372	Booklet entitled "Olin-Mathieson Chemical Corporation (Copyright 1957)"		
373	Olin-Mathieson Organizational Chart	7-24-58	
374	Olin-Mathieson Chemicals Division Personnel Chart	9-22-59	
375	Olin-Mathieson Chemicals Division Personnel Chart	2-27-61	
376	Plaintiff's Statistical Data		

[fol. 158] Thursday, November 2, 1961, Ten o'clock a. m.

PRESENT:

For the Plaintiff; Daniel J. Freed, Esq. and Edward A. Copley, Esq.

For Defendant Pennsalt Chemicals Corp.: John T. Subak, Esq.

Mr. Freed: Before we adjourn our documentary submission the Government would like to make several statements for the record about the procedure which has been followed.

First, as a result of stipulations agreed to in principle last night on the subjects of sodium chlorate data stipulations, stipulations which have been called General Stipulations Set 1, and Non-chlorate Stipulations, the Plaintiff has not designated as exhibits additional documents which might have been required in the absence of stipulations.

In addition, as a result of agreement of counsel that the order of the Court on Monday, October 30th, should be interpreted to require both sides to submit in advance to each other all documents to be offered, whether through live witnesses or not; and, of course, with the exception of any [fol. 159] documents that a third party live witness may bring with him for the first time during trial, the plaintiff has offered in evidence Plaintiff's Exhibit No. 376, which includes a number of maps prepared by Mr. Leo Finn, our economist. These maps have been prepared exclusively from data that have been the subject of stipulations and disclose in large part the character of live testimony which Mr. Finn will give next week.

We understand that the defendants will do the same respecting their documents as they become available, and no later than, as the Court ordered, two days prior to the start of their case.

We have taken up with the Court the matter of withdrawal from the Court's files of depositions of Olin and Pennsalt personnel and also the matter of withdrawing certain documents for duplication by plaintiff between now and Monday, and it is my understanding that Judge Steel, being advised that the parties were in agreement that these withdrawals could be made for the purpose of

correction or copying, has consented to this withdrawal.

I should add that the depositions being withdrawn from the Court's files are all depositions except that of Dr. LaLande. In the case of the Olin depositions the plaintiff has undertaken physically to mark corrections in the transcripts. In the case of all depositions the plaintiff has undertaken to mark in red its original designations and in [fol. 160] green its counter-designations. It is our understanding that the defendants will later mark in blue their cross designations.

With respect to the documents being withdrawn we will furnish to the Clerk a list of the exhibit numbers of each document which we will remove today and return Monday to the Court's files.

The Clerk: I don't know whether counsel were on the record when it was agreed that what Mr. Freed has just spoken of could be done, but it was so agreed, I understand, Mr. Subak, by you and Mr. Barnum relative to the withdrawal of exhibits and depositions.

Mr. Subak: We did agree yesterday that the Government could withdraw such documents and such depositions as it wished, and the understanding was that they would be returned on Monday.

There is one minor correction as to what Mr. Freed said. Pennsalt has in fact corrected all the ribbon copies of the depositions of its personnel and of Mr. Fred Shanaman, so that the only corrections to be made are those of Olin personnel.

Mr. Freed: I said that.

(There was a discussion off the record.)

Mr. Subak: As Mr. Freed and I discussed while we were [fol. 161] off the record, the defendants may wish to introduce some documents or other exhibits during the presentation of their live case which may not be available for furnishing to plaintiff two days before defendants begin their case. The defendants will try to give to plaintiff as many of their documents and exhibits as is possible two days before defendants start their case, and at that time will indicate the nature of any other documents or exhibits, if any, which defendants might want to introduce.

As to such additional documents or exhibits we would

undertake to let the Government have a copy as soon as possible, and preferably at least two days before such documents or exhibits would be tendered into evidence.

Mr. Freed: Now that we have submitted to Mr. Pollard a list of the withdrawn documents and in light of all of the statements of counsel this morning, I belive this closes the document offering and marking session, and the parties will return Monday at ten o'clock to continue with the submission of deposition, stipulation, and interrogatory evidence.

The Clerk: I have the exhibits, and I am leaving them in the court room for Mr. Subak to examine and compare with his copies, and when he has finished he will advise me and I will pick them up and have them initialled.

(At this point the trial was adjourned to Monday, November 6, 1961, at 10:00 a. m.)

[fol. 162] Monday, November 6, 1961, 10 o'clock a. m.

PRESENT:

As before noted.

(The following occurred in open Court out of the presence of the Court with the Clerk and Court Reporter present:)

Mr. Freed: Mr. Pollard, the plaintiff appears this morning pursuant to order of Court on Monady, October 30, for the purpose of offering into evidence its deposition, interrogatory and stipulation evidence. The evidence submitted last Wednesday pursuant to Court order included Plaintiff's Exhibits 1 through 376. This morning, as the first part of our submission, we offer into evidence a number of interrogatories grouped by subject matter, each group bearing a separate plaintiff exhibit number. The interrogatory exhibits cover Plaintiff's Exhibits 377 through 391.

Being submitted with those designations are cover sheets for all interrogatories which plaintiff offers into evidence.

It is the intention of plaintiff to recopy all interrogatories and interrogatory responses designated in each of these exhibits and submit them in the folders now being offered in order that the convenience of the Court and the parties [fol. 163] will be served by grouping interrogatories under meaningful subject heading categories. The task of typing or copying interrogatory material is well under way and plaintiff will submit the copies as soon as they are completed.

Plaintiff also offers into evidence this morning as separate exhibits twenty depositions. These depositions will bear Plaintiff's Exhibit Nos. 392 through 411. The sequence of numbers will be the same as appear on plaintiff's supplemental deposition designations, a document which is being submitted this morning pursuant to Court order following counter-designations by the defendants.

I suggest that the transcript of this hearing record the interrogatory numbers and subject headings designated in Plaintiff's Exhibits 377 through 391 and that the list of deponents and appropriate exhibit numbers be recorded following 391 so that as of the moment 411 exhibits will be recorded in the record as having been submitted by the plaintiff.

Under each deposition exhibit the plaintiff suggests that the designations of depositions which are recorded in plaintiff's deposition designations, sets 1 through 5, plus plaintiff's corrections dated October 31, plus plaintiff's supplemental deposition designations, be recorded under the deposition to which those designations pertain. At the same [fol. 164] time the counter-designations made by defendants should also be recorded. For example, Plaintiff's Exhibit 392 will be the deposition of William P. Drake. Under that item on the index of this morning's hearing should be listed the designations contained in plaintiff's deposition designation Set 3 for William P. Drake, the corrections in the way of substitution contained in plaintiff's deposition designations Set 4, the additional corrections noted in plaintiff's deposition designation corrections dated October 31, the counter-designations by Pennsalt and the supplemental designations of William P. Drake on the counter-designations which plaintiff has submitted this

morning. Following the same procedure the record will show on its face all portions of each deposition offered as an exhibit.

The parties have already commenced the marking of the Court's copies of all depositions in the following manner: All original designations by the plaintiff are marked in red. All counter-designations by defendants are marked in blue. All supplemental designations by the plaintiff are marked in green. The parties will continue after today's sessions to complete the crayoning of the Court's copy in accordance with the designations which are this morning being turned over to the reporter.

I would like at this time to request a recess in this sub- [fol. 165] mission of evidence session in order that the parties may proceed with an appointment with Judge Steel, the purpose of which is to submit for approval of the Court three stipulations. After these stipulations have been passed upon by the Court the plaintiff will return and offer them into evidence together with corrections to Plaintiff's Exhibit 376. That exhibit contains a number of data charts and corrections are being made to reflect stipulation sources and also to reflect changes in data as the result of errors in underlying data furnished by one of the defendants.

(At this point a recess was taken.)

Plaintiff's Exhibit No. 377

Personnel

Olin Interrogatories

1. Olin and Penn-Olin officials
5. Olin participants in joint venture negotiations
6 and 7. Olin personnel with responsibilities re sodium chlorate
66. Olin personnel with responsibilities re sodium chlorate and nonchlorates
75. Author of Sodium Chlorate Market Study (PX 239)
78. Authors of Capital Appropriation Request dated July 7, 1960 (PX 362)

[fol. 166] Pennsalt Interrogatories

1. Pennsalt and Penn-Olin officials
5. Pennsalt participants in joint venture negotiations
6. Pennsalt personnel with responsibilities re sodium chlorate.
37. Participants in preparation of Pennsalt's Commercial Development Report (PX 96C)
47. Pennsalt personnel with responsibilities re sodium chlorate and nonchlorates.

Plaintiff's Exhibit No. 378

Chlorine Dioxide Processes and Installation

Olin Interrogatories

8. Olin Mathieson Process users
52. Competitive chlorine dioxide processes
74. Pennsalt's rights under the July 31, 1953 chlorine dioxide licensing agreement

Pennsalt Interrogatories

28. Pennsalt licensees and companies solicited under the July 31, 1953 chlorine dioxide licensing agreement

[fol. 167] Plaintiff's Exhibit No. 379

Penn-Olin

A. Penn-Olin Financing Negotiations
Olin Interrogatories 2 and 88
Pennsalt Interrogatories 2 and 88
B. Construction of Penn-Olin facility
Pennsalt Interrogatory 4
C. Raw Materials for Penn-Olin

Olin Interrogatories:

17. Origin of raw materials
68. Olin as a supplier of Penn-Olin raw materials

Pennsalt Interrogatories:

16. Origin of raw materials
49. Pennsalt as a supplier of Penn-Olin raw materials

Penn-Olin Interrogatories:

16. Origin of raw materials
D. Olin and Pennsalt as Potential Consumers of Penn-Olin.
Sodium Chlorate
Olin Interrogatory 67
Pennsalt Interrogatory 48
E. Stock
Olin Interrogatory 64
F. Treatment of Penn-Olin in Pennsalt Financial Statement
Pennsalt Interrogatory 45

[fol. 168] Plaintiff's Exhibit No. 380

Market Areas for Sodium Chlorate

Olin Interrogatories

19. Area of distribution for Penn-Olin sodium chlorate

Pennsalt Interrogatories

12. Sodium chlorate markets
18. "Southeastern United States"

Penn-Olin Interrogatories

18. "Southeastern United States"

Plaintiff's Exhibit No. 381

Prices

Olin Interrogatories

53. Price and terms of sale of sodium chlorate and calcium hypochlorite
54. Reasons for price differences

Pennsalt Interrogatories

21. Market price of sodium chlorate, calcium hypochlorite, and hydrofluoric acid
22. Pennsalt price and terms re sodium chlorate, calcium hypochlorite, and hydrofluoric acid.
23. Purchasers of Pennsalt sodium chlorate and calcium hypochlorite
24. Reasons for variation in price

[fol. 169] Plaintiff's Exhibit No. 381 (Cont.)

25. and 26. East-West sodium chlorate price differences

Plaintiff's Exhibit No. 382

Pennsalt's Sodium Chlorate Data

Pennsalt Interrogatories

81. Pennsalt sodium chlorate production
82. Pennsalt sodium chlorate productive capacity
85. Consumption and sale of Pennsalt sodium chlorate and derivatives

Plaintff's Exhibit No. 383

Pennsalt Sodium Chlorate Sales and Solicitations

Pennsalt Interrogatories

32. Purchases of sodium chlorate shipped from Portland
33. Shipments to states
34. Shipment to customers east of the Rockies
35. Solicitations east of the Rockies
36. Advertising

Plaintiff's Exhibit No. 384

Pennsalt's Eastern Sales Force

Pennsalt Interrogatory 87

[fol. 170] Plaintiff's Exhibit No. 385

Pennsalt's Sales in the Southeast

Pennsalt Interrogatory 84.

Plaintiff's Exhibit No. 386

Olin Sodium Chlorate Sales and Solicitations

Olin Interrogatories

59. Sales and solicitation of sodium chlorate
60. Advertisements
76. Olin salesmen selling or soliciting sales of sodium chlorate

Plaintiff's Exhibit No. 387

Sodium Chlorate Purchased from Pennsalt and Consumed by Olin

Olin Interrogatory 13

Plaintiff's Exhibit No. 388

Olin Plants and Products

Olin Interrogatory 10

[fol. 171] Plaintiff's Exhibit No. 389

Olin Capital Investments

Olin Interrogatories

79. Investments of more than $5 million since 1956
80. Olin's new capital investment projects in inorganic chemicals

Plaintiff's Exhibit No. 390

Perchlorates

Olin Interrogatories

14. Olin patents re perchlorates
15. Olin research and production activities in solid propellant rocket fuels

Pennsalt Interrogatories

83. Pennsalt's ammonium perchlorate productive capacity
See also 85

Plaintiff's Exhibit No. 391

Nonchlorate Competition

Olin Interrogatories

See Interrogatory 66

Pennsalt Interrogatories

27. Pennsalt competitors in hydrofluoric acid and calcium hypochlorite
See also Interrogatories 21, 22 and 47

[fol. 172] Plaintiff's Exhibit No. 392 (A, B & C)

William P. Drake Deposition

Plaintiff's Designations

3-6(2); 7(24) - 9(22); 11(13) - 19(1); 21(6) - 23(1); 27(18) - 105(18); 106(16) - 108(25); 110(3) - 123(23); 125(21) - 129(2); 133(24) - 135(18); 153(1) - 153(25); 156(4) - 157(9); 162(24) - 166(5); 168(10) - 174(21); 182(21) - 193(15); 194(5) - 195(10); 196(23) - 206(20); 208(17) - 213(18); 216(7) - 218(17); 221(22) - 234(25); 239(3) - 256(22); 258(12) - 267(12); 273(22) - 274(15); 275(14) - 278(24); 281(6) - 282(18); 290(11) - (12); 300 (4) - (13); 302(10) - 304(5); 306-310 (12); 311(10) - (15); 312

(20) - 317(7); 318(7) - 319(19); 320(17) - 322(3); 322(23) - 323(5); 325(8) - 326(15); 327(3) - (11); 331(15) - 338(8); 334-338 (21); 350(7) - 351(21); 352(15) - 356(3).

Defendants' Counter-Designations

7(10) - 7(23); 25(21) - 26(12); 123(4) - 123(15); 124(17) - 125(3); 129(9) - 129(20); 130(17) - 132(end); 142(7) - 145(2); 218(18) - 218(21); 235(1) - 235(18); 257(1) - 258 (11) - (Unless objection to 255(11) - 256(22) and 258(12) - 259(1) is sustained.); 327(12) - 328(13); 361(12) - 362(8).

Plaintiff's Supplemental Designations

133; 141(25) - 142(6); 145(3) - 146(16); 235(19) - (25); 329(17) - (21); 346(7) - 348(end).

[fol.173] Plaintiff's Exhibit No. 393

Fred C. Shanaman Deposition

Plaintiff's Designations

2 - 7(4); 9(4) - 46(22); 48(22) - 75; 78(9) - 88(10); 90(22) - 106(17); 124(3) - (14); 131(11) - 155(3); 173(5) - 208(18); 210(17) - 223(19); 228 - 259(3); 260(19) - 263; 270(2) - 279(1); 285(11) - 286(9); 319(4) - 320; 323(13) - 331(17); 337(13) - 341(5); 344(19) - 347(14); 355(17) - 357(12); 361(12) - 363(4).

Defendants' Counter-Designations

155(4) - 155(6); 157(5) - 157(9); 157(16) - 160(19); 170(3) - 173(4); 314(7) - 319(3); 331(18) - 331(20); 347(18) - 355(16); 357(13) - 361(11); 363(5) - 367(4); 371(2) - (12); 371(19) - 372(12); 373(13) - 381(5).

Plaintiff's Supplemental Designations

155(7) - 157(4); 157(10); 160(19) - 166(13); 367(25) - 370(23); 372(13) - (15).

Plaintiff's Exhibit No. 394

Albert H. Clem Deposition

Plaintiff's Designations

4(13) - 7(11); 8(14) - 12; 13(11) - 14(4); 21(1) -(11); 22(21) - 23(7); 24(11) - 36(9); 39(12) - 40(23); 42(6) - 48(15); 52(8) - 54(23); 55(21) - 63(22); 65(6) - 78(5); [fol. 174] 81(14) - 90(6); 93(20) - 97(20).

Defendants' Counter-Designations

14(5) - (23); 14(24) - 15(20); 21(12) - 22(3); 36(10) - (22); 40(24) - 41(13); 80(6) - (16); 92(10) - (24); 97(23) - 100(14).

Plaintiff's Supplemental Designations

15(21) - 16(7); 22(4) - (20); 41(14) - 42(1).

Plaintiff's Exhibit No. 395

Leroy M. Shanaman Deposition

Plaintiff's Designations

2 - 3(14); 7(20) - 11(24); 13(22) - 15(4); 16(9) - (23); 28(13) - 29(3); 29(22) - 30(3); 32(21) - 33(12); 35(21) - 37(14); 41(4) - 45(3); 53(11) - (25); 55(16) - 56(7).

Defendants' Counter-Designations

3(15) - 4(9); 7(7) - 7(19); 13(7) - 13(12); 15(5) - 17(18); 29(4) - 30(3); 34(20) - 35(20); 45(4) - 45(18 to "out here."); 50(6) - 53(10).

Plaintiff's Supplemental Designations

45(18) - 46(1).

[fol. 175] **Plaintiff's Exhibit No. 396**

William Cooper Willits Deposition

Plaintiff's Designations

286 - 292(11); 294(20) - 297(17); 298(9) - 298(25); 300(15) - 303(8); 304(9) - 307(10); 308(7) - 310(11); 311(12) - 314(15); 317(1) - 317(17); 319(21) - 320(9); 327(15) - 328(5); 333(9) - 334(25); 350(11) - 355(16); 360(11) - 363(2).

Defendants' Counter-Designations

292(18) - 294(19); 303(9) - 304(8); 307(11) - 308(2); 310(12) - 311(11); 314(16) - 314(25); 316(4) - 316(25); 329(10) - 329(23).

Plaintiff's Supplemental Designations

315(1) - 316(3).

Plaintiff's Exhibit No. 397

George T. Collins Deposition

Plaintiff's Designations

2 - 3(23); 5(11) - 8(12); 9(1) - 10(12); 11(3) - 13(19); 14(15) - 15(4); 18(16) - 19(12); 20(6) - 21(6); 25(1) - 25(10); 26(5) - 26(10).

Defendants' Counter-Designations

21(7) - 21(24); 24(20) - 24(24).

Plaintiff's Supplemental Designations—None

[fol. 176] **Plaintiff's Exhibit No. 398**

James McWhirter Deposition

Plaintiff's Designations

3(14) - 5(22); 12(11) - 20(7); 23(8) - (14); 24(11) - 25(12); 27(7) - 30(20); 31(11) - 33(2); 34(6) - 35(21); 36(19) - 37(9); 44(15) - (24); 45(6) - (8); 45(17) - (24); 46(6) - (11); 49(11) - (20); 52(12) - 53(1); 53(15) - 54(5); 55(18) - 56(11); 59(11) - 61(21); 70(3) - 73(21); 82(9) - 83(24); 94(5) - 98(9); 99(2) - 101(2); 115(20) - (24); 122(12) - 123(21); 125(20) - 126(20); 127(18) - 128(12); 130(11) - 138(3); 166(8) - (18); 169(14) - 170(2).

Defendants' Counter-Designations

8(1) - 8(18); 30(21) - 31(2); 33(3) - 33(9); 35(22) - 36(1); 38(9) - 39(8); 53(2) - 53(10); 75(17) - 82(8); 91(12) - 94(3); 127(8) - 127(17); 153(17) - 158(end); 166(19) - 167(21).

Plaintiff's Supplemental Designations

7(18) - (24); 11(14) - 12(10); 26(11) - 27(6); 39(9) - (24); 87(11) - 88(6); 90(5) - 91(11); 111(23) - 112(4); 159-161(3); 165(11) - 166(7); 167(22) - 168(17).

Plaintiff's Exhibit No. 399

George D. Grogan Deposition

Plaintiff's Designations

2 - 22(3); 24(16) - 24(24); 27(19) - 31(18); 33(3) - [fol. 177] 38(2); 40(7) - 44(1); 48(9) - 51(13); 55(12) - 56(6); 58(16) - 64(16); 67(5) - 67(24); 74(2) - 76(12); 77(7) - 79(24); 82(8) - 83(6); 85(16) - 86(13); 88(19) - 90(7); 91(3) - 92(20); 95(21) - 96(19); 97(5) - 97(18); 98(16) - 109(17); 110(9) - 113(21); 119(7) - 121(4); 122(9) - 123(8); 125(6) - 127(14); 128(5) - 129(11); 131(5) - 133(1); 133(24) - 134(5).

Defendants' Counter-Designations

31(19) - 31(21); 39(17) - 40(6); 44(2) - 47(4); 51(14) - 51(24); 52(8) - 52(15); 54(1) - 55(11); 56(7) - 58(15); 64(17) - 66(12); 72(3) - 74(1) - 83(7) - 85(14); 86(14) - 87(1); 92(21) - 94(17); 121(17) - 122(8); 123(10) - 123(19); 124(13) - 125(5); 127(15) - 128(4); 129(12) - 131(4); 134(7) - 137(19).

Plaintiff's Supplemental Designations

47(5) - (25); 123(20) - 124(12).

Plaintiff's Exhibit No. 400

Hugh C. Land Deposition

Plaintiff's Designations

3(18) - 76(18); 81(13) - 107(15); 112(9) - 187(4); 190 - 195.

Defendants' Counter-Designations

187(5) - 189(24).

[fol. 178] Plaintiff's Supplemental Designations

None

Plaintiff's Exhibit No. 401

Dr. William C. Gardiner Deposition

Plaintiff's Designations

2 - 24(12); 27(11) - 40(19).

Defendants' Counter-Designations

27(2) - (7).

Plaintiff's Supplemental Designations

27(7) - (10).

Plaintiff's Exhibit No. 402

Stanley de J. Osborne Deposition

Plaintiff's Designations

2(25) - 8(16); 13(1) - (23); 28(12) - 29(9); 30(19) - 31(2); 33(6) - (14); 36(4) - (12); 56(7) - 58(23); 61(11) - 62(7); 63(12) - 65(11); 66(25) - 67(13); 68(14) - 70(17); 71 - 73(11); 75 - 76(18); 77(16) - 79(9); 81(12) - (22).

Defendants' Counter-Designations

13(24) - 14(14); 16(19) - 21(2); 22(5) - 24(17); 24(24) - 26(6); 27(8) - 28(11); 29(10-18); 31(4) - 32(18); 32(25) - 33(5); 33(15) - 34(9); 34(17-19); 34(24) - 35(18); 36(20) [fol. 179] - 37(12); 38(12-19); 39(20) - 40(11); 41(14) - 48(14); 51(3-15); 52(15) - 53(16); 62(8) - 63(3); 66(17-22); 74(6-25); 77(2-15); 82(2) - 87(17); 90(2) - 93(3); 93(21) - 94(8).

Plaintiff's Supplemental Designations

8(17) - 12(25); 14(15) - 16(18); 21(4) - 22(4); 24(18) - (23); 26(7) - 27(7); 32(19) - (24); 34(10) - (16); 34(20) - (23); 35(19) - 36(3); 36(13) - (19); 38(20) - 39(19); 40(2) - 41(13); 50(5) - 51(2); 51(16) - 52(3); 53(17) - 55(19); 60(9) - (14); 61(1) - (10); 76(19) - (25); 93(1) - (20).

Plaintiff's Exhibit No. 403

Derek Richardson Deposition

Plaintiff's Designations

1 - 4(14); 6(6) - 10(12); 12(2) - 15(15); 17(6) - 18(8); 20(9) - 22(13), 24(3) - 25(4); 26(6) - (14); 28(23) - 30(6); 31(21) - 35(1); 38(2) - (13); 39(7) - 41(2); 42(12) - 44(12); 46(14) - 49(1); 50(14) - 54(23).

Defendants' Counter-Designations

4(15-18); 11(3-9); 15(16) - 16(15); 18(9) - 20(8); 22(23) - 23(20); 30(7-11); 30(23) - 31(5); 31(10-20); 35(17) - 37(18); 55(7-14).

Plaintiff's Supplemental Designations

30(12) - (22); 31(6) - (9); 37(19) - 38(1); 55(15) - (20).

[fol. 180] Plaintiff's Exhibit No. 404

Dr. Norman O. Stein Deposition

Plaintiff's Designations

3 - 17(1); 18(4) - 23.

Defendants' Counter-Designations

None

Plaintiff's Supplemental Designations

None

Plaintiff's Exhibit No. 405

Cecil L. Williamson Deposition

Plaintiff's Designations

3 - 4(9); 6(5) - 7(20); 10(11) - 11(3); 82(14) - 97(19); 104(1) - 111(4); 118(20) - 129(18); 145(10) - 165(13); 173(16) - 177(6).

Defendants' Counter-Designations

66(4-15); 118(1-19); 178(11-21).

Plaintiff's Supplemental Designations

179 - 180(1).

Plaintiff's Exhibit No. 406

Dr. Bruno H. Wojcik Deposition

Plaintiff's Designations

131 - 136(12); 137(11) - 138(3); 139(11) - 140(5); 141(21) - 143(15); 148(13) - 151(16); 152(18) - 166(8); [fol. 181] 167(21) - 175(18); 181(3) - 182(9); 185-187;

192(9) - 194(10); 198 - 199(3); 202(9) - 208(11); 211(10) - 220(14); 222(15) - 223(11); 227(3) - 231(3); 237(16) - 243(9); 243(19) - 246(9); 247(3) - 260(18); 264(12) - (18); 268(8) - 270; 272(4) - 281(16); 285(9) - 292(20); 293(20) - 294(15).

Defendants' Counter-Designations

144(18) - 147(10); 147(16) - 148(12); 152(13-17); 167(8-18); 188(9) - 189(3); 190(3-20); 196(21) - 197(15); 208(12-14); 208(21) - 211(7).

Plaintiff's Supplemental Designations

147(11) - (15); 151(17) - 152(12); 189(4) - 190(2); 197(16) to end; 208(15) - (20).

Plaintiff's Exhibit No. 407

Joseph L. Wood Deposition

Plaintiff's Designations

4 - 6(19); 35(20) - 42(15), 46(19) - 48(16); 54-55(1).

Defendants' Counter-Designations

7(21) - 8(4); 9(16) - 15(16); 16(6-13); 19(3-11); 21(1) - 25(4); 26(7-20); 27(9) - 29(16); 30(4) - 33(5); 34(10-18); 42(16) - 43(20); 50(3) - 51(7); 51(12-14); 52(6) - 53(21); 55(2-17); 57(10) - 60(14); 60(21) - 62(15).

[fol. 182] Plaintiff's Supplemental Designations

26(21) - 27(5); 33(6) - 34(9); 34(19) - 35(6); 48(17) - 50(1); 51(15) - 52(5); 60(15) - (20).

Plaintiff's Exhibit No. 408

John O. Logan Deposition

Plaintiff's Designations

1 - 30(2); 36(7) - 54(21); 57(4) - 60(2); 62(3) - 66(5); 68 - 74(11); 77 - 80(13); 82(6) - 110(17); 113 - 118; 122(17) - 130(3); 133 - 134(15); 137(23) - 205(6); 206(12) - (24);

209(20) - 214(18); 217(3) - (16); 220(18) - (23); 224(2) - 253.

Defendants' Counter-Designations

56(18) - 57(3); 74(12-15); 75(17) - 76(1).

Plaintiff's Supplemental Designations

None

Plaintiff's Exhibit No. 409

Russell Hopkinson Deposition

Plaintiff's Designations

2 - 12(11); 22(5) - 22(13); 23(22) - 25(15); 30(9) - 32(2); 32(17) - 32(23); 40(20) - 44(15); 46(5) - 46(16); 54(2) - 62(13); 72(19) - 72(23); 74(9) - 74(20); 76(14) - 76(24).

[fol.183] Defendants' Counter-Designations

16(1) - 19(18); 20(19) - 21(18); 26(18) - 28(8); 30(2-8); 33(15) - 35(12); 36(17) - 37(16); 38(1-8); 49(9-22); 50(18) - 52(18); 62(14) - 64(19); 68(5) - 72(18); 79(21) - 81(10); 82(7) - 87(2); 94(6-17); 99(7) - 100(7); 104(3) - 105(1); 106(24) - 108(6).

Plaintiff's Supplemental Designations

14(13) - 15(7); 35(13) - 36(16); 38(9) - 40(19); 52(19) - (24); 81(11) - 82(3); 103(16) - 104(2); 105(2) - (21); 106(8) - (23).

Plaintiff's Exhibit No. 410

James G. Johns Deposition

Plaintiff's Designations

305 - 339(19); 341(8) - 369(5); 366(14) - 369(13); 371(20) - 374(16); 377(14) - 378(15); 385(13) - 392; 394(16) - 396(5); 404-412(6); 414(15) - 422(17); 425(2) - 436; 438 - 445(5); 449(6) - 454(20); 456(7) - 463(6); 464(8) - 468(6); 472(11) - 476(11); 485(17) - 496(15);

497(18) - 508(12); 512(6) - 515(8); 517(6) - 528(15); 536(2-18); 538(8) - 541(19); 545(3) - 546(3); 552(5) - 553(8); 567(8-14); 569(18) - 570(9); 572(13) - 574(6); 597(12) - 601(5); 606(14) - 607(12); 612(5) - 627(2).

[fol. 184] Defendants' Counter Designations

374(17) - 376(14); 445(6) - 447(14); 496(16) - 497(17); 542(13) - 544(2); 553(9) - 554(7).

Plaintiff's Supplemental Designations

541(20) - 542(12).

Plaintiff's Exhibit No. 411

Walter W. Northgraves Deposition

Plaintiff's Designations

1 - 5(9); 13(3) - 37(10); 39(2) - 52(12); 53(18) - 54; 56(2) - 65(9); 67-79(20); 89(10) - 92(7); 107(18) - 113(7); 116-117(8); 121(12) - 122(2); 123(6-20).

Defendants' Counter-Designations

37(11) - 38(3); 38(9) - 39(2); 79(21) - 89(4); 92(8) - 96(3); 98(14) - 99(17); 103(10) - 107(17); 113(8) - 114(19); 115(13-20); 117(9) - 121(11); 122(3) - 123(5).

Plaintiff's Supplemental Designations

None.

[fol. 185] (In Chambers.)

The Court: What is it?

Mr. Freed: Your Honor, the sole purpose of this morning's conference is to submit to you three stipulations which the parties have entered into for the purpose of shortening the trial; stipulating to a number of facts which, we understand from your remarks at the pre-trial conference on October 17, do require approval of the Court.

Any discussion of the substance of these has been requested by defendants to be deferred until the opening of

court this afternoon when other defense counsel can be present.

In submitting them to you at this time I would simply like to state that one of the stipulations is called "Non-Chlorate Stipulation" and covers the matter that was taken up extensively at the pre-trial conference of October 17. And the parties have worked hard and have reached agreement between themselves as to what is being stipulated, and we know of no issue between ourselves on the subject matter of the non-chlorate part of the case. But in submitting it to you we do want to be sure that the Court understands the parties' language, because last time the parties' language did not communicate fully our intent. We would hope at this afternoon's session if there are any questions about the meaning of the language that they could be taken up and straightened out.

[fol. 186] The only other item that may require some statement will be Item 44, what is called, "General Stipulations, Set I," which reads, "Sodium chlorate constitutes a single line of commerce within the meaning of Section 7 of the Clayton Act."

It was our intention to offer these three stipulations as three separately designated plaintiff's exhibits, and we can perhaps defer the identification of these as exhibits and the offering until this afternoon's session, if you wish.

One of the stipulations, which is purely factual and covers the data part of the case is the basis upon which we will return to the court room now and read into the record certain corrections or changes in an exhibit book, Plaintiff's Exhibit 376, which contains a number of charts and graphs prepared by the Government and submitted last Wednesday.

As a result of these stipulations the source material listed on the original Plaintiff's Exhibit 376 can now be clarified and citations made to stipulated data rather than to underlined data.

We propose to substitute for the Court's record clean pages that have been redone in light of the stipulations.

The Court: Do you propose to leave anything with me to look at?

Mr. Freed: We propose to leave all of the stipulations with Your Honor, and on two of the stipulations a blank

has been left for the approval of the Court. It was inad-
[fol. 187] vertently left off the third one.

The Court: Very well. I shall endeavor to look these over before this afternoon.

Mr. Barnum: I must apologize for the fact that Mr. Potter's name or his firm's name is not affixed to these stipulations. I told him this morning it would not be necessary for him to be here at 10:00.

The Court: He can simply sign them when he comes over, or some later time.

Mr. Barnum: Thank you.

(In open court, out of the presence of the Court; Mr. Freed, the Clerk of the Court, and the Court Reporter only being present.)

Mr. Freed: Mr. Pollard, with the approval of the defendants the Government wishes to submit at this time a substitute for its Plaintiff's Exhibit 376. This substitute is a blue-covered book containing a number of charts and maps.

The material in this booklet is virtually the same as that submitted last Wednesday. It has been modified to reflect stipulations or stipulation sources for data; and, also, to make a number of minor corrections agreed to by the parties last week.

In addition, several pages of the original book have been
[fol. 188] removed because they contained erroneous data. By agreement with the defendants the Government will submit corrected material as soon as the corrected data is received from the defendants.

I would now like to offer Plaintiff's Exhibit 376, New Version, in lieu of the exhibit submitted last Wednesday.

(Plaintiff's Exhibit 376, New Version, was received in evidence and marked as "Plaintiff's Exhibit No. 376.")

(At this point a recess was taken until 2:00 p.m. the same day.)

[fol. 189] 2 o'clock p. m., The same day.

PRESENT:

As before noted.

Mr. Freed: Your Honor, pursuant to the order of Court on October 30, 1961, the plaintiff has, since last Monday, offered into evidence 411 exhibits, including documents, depositions and interrogatories. All of these exhibits were submitted in the presence of the Clerk, the Court Reporter, and counsel for the parties.

May the record show now that these exhibits are received in evidence subject to objections of the parties in their briefs?

The Court: They are so received in evidence subject to the qualification you have stated.

(Plaintiff's Exhibits 1 to 411, inclusive, were received in evidence.)

Mr. Freed: Since the last session in open Court the parties have entered into three sets of stipulations which have not yet been entered as exhibits. The first stipulation is entitled, "Sodium Chlorate Data Stipulation." The stipulation has been signed by the parties, subject to the approval of the Court, and I would like to offer this stipulation [fol. 190] as Plaintiff's Exhibit 412, subject to approval of the Court.

The Court: I have read the stipulation and approve it and it is admitted in evidence. Is there a place on the stipulation for me to evidence my approval by signing it or is my approval sufficiently evidenced by this statement?

Mr. Freed: The Government is satisfied with you Honor's statement in open Court. Inadvertently an approval line was left off this particular stipulation.

The Clerk: With the consent of counsel, your Honor, I am inserting the date of the 6th of November.

(The stipulation entitled, "Sodium Chlorate Data Stipulation" was received in evidence and marked "Plaintiff's Exhibit No. 412.")

Mr. Freed: The Government would like next to offer into evidence as Plaintiff's Exhibit 413 a stipulation entitled "Non-Chlorate Stipulation." This stipulation is divided into two numbered parts. In the first part the parties agree that competent witnesses, if called by the plaintiff, would testify to a number of facts.

Part 2 of the Non-Chlorate Stipulation reads as follows: That the parties agree to the following:

> "That the presence or absence of substantial com-
> [fol. 191] petition between Olin and Pennsalt with respect to production and sale of ammonia, caustic soda, chlorine, and hydrofluoric acid or of the existence of any relevant market for such chemicals is not relevant to the determination of any issue in this case."

I would like for the record, sir, to make a brief statement as to why the parties agreed in the Government's understanding to that stipulation as to relevancy.

The Court: Do you have a copy of the stipulation that I can look at?

The Clerk: PX-413.

The Court: It has not been admitted yet, Mr. Clerk. Perhaps it will be.

Mr. Freed: In part 1 of the non-chlorate stipulation, among the many facts that are there agreed upon there appears as Sub-paragraph (b) the following statement:

> "In the case of calcium hypochlorite the relevant market is nationwide and the competition between Olin and Pennsalt in the sale of calcium hypochlorite is substantial."

It was the agreement of the parties, dating back almost to the outset of this case, that if there were a stipulation as to substantial competition between the parties in a relevant market on a product other than sodium chlorate which [fol. 192] is involved in this case, that such a stipulation would adequately raise the question of the relevancy of competition in other chemicals to the issues in this case.

The parties were in agreement and are in agreement that whether or not there is a relevant market for each of the

other chemicals listed here, and whether competition in such relevant market or markets is substantial is not necessary to agree upon or to show since if there is substantial competition between the parties in a relevant market, how many times it is substantial or in how many markets it is substantial, or in how many products it is substantial did not appear to be necessary to decide in this case.

In the words of counsel for one of the defendants early in this case the parties did not desire to try seven separate Section 7 cases.

The Court: In other words, from the Government's standpoint it can be assumed that with reference to the chemicals which are described in Paragraph 2 of the non-chlorate stipulation it may be assumed there is no competition between the parties in any portion of that?

Mr. Freed: No. Such an interpretation would be contrary to the words of the first part of the stipulation itself. The parties are in agreement as shown by Paragraph 1(a) that Olin and Pennsalt each sell seven chemicals, that [fol. 193] competition in two is de minimus, but that the two companies do compete in the sale of five others.

Set forth as Appendix A to this stipulation is a chart of agreed data which shows the volume of sales by each of the defendant companies in these competitive chemicals. It is only the question of whether each chemical constitutes a relevant market in and of itself, and whether there is substantial competition in those markets that the parties did not feel was relevant to any issue in this case so long as a guinea "pig chemical," namely, calcium hypochlorite, was stipulated to insofar as substantiality and relevant market was concerned.

With that explanation, and subject to any disagreement if I have made a misstatement, by the defendants, the Government offers the non-chlorate stipulation into evidence as Plaintiff's Exhibit 413.

The Court: Is there any objection to the admission of the stipulation, subject to the explanation which has just been offered?

Mr. De Lone: None in light of the reservations and the stipulations, but I just would like to say for the sake of clarity that, of course, agreeing on this guinea pig for this present and this relevant market is in no sense an

agreement on our part that the nationwide market is the [fol. 194] relevant market in sodium chlorate. I do not believe Mr. Freed intended that. I was afraid his remarks might be so interpreted.

Mr. Freed: It is our understanding that this stipulation has nothing to do with sodium chlorate.

The Court: The stipulation is admitted, subject to the explanation which has just been given by the Government.

(The stipulation entitled "Non-Chlorate Stipulation" was received in evidence as "Plaintiff's Exhibit No. 413.")

Mr. Freed: The third set of stipulations which the Government now offers into evidence as Plaintiff's Exhibit 414 is entitled, "General Stipulations, Set 1." At the moment there is no Set 2, nor are any further stipulations contemplated.

These stipulations cover a number of miscellaneous facts, and only with respect to one item, namely, Stipulation No. 44, is there a need or a possible need for explanation.

The Court: May I have a copy of that stipulation you are referring to?

Mr. Freed: Item 44 of the general stipulations reads:

> "Sodium chlorate constitutes a single line of com- [fol. 195] merce within the meaning of Section 7 of the Clayton Act."

I believe Mr. De Lone would like to make a statement to the Court with reference to this stipulation.

Mr. De Lone: If the Court please, I simply do not want to mislead either the Court or the Government concerning the significance of this stipulation. We agreed that sodium chlorate is a single line of commerce, but as I think is recognized both by the Government and by counsel for the defendants, sodium chlorate has different uses, different applications and also is marketed differently in the sense that it is marketed both in bulk and in packages.

We will urge your Honor to take into account some of these factors in your decision as to what is the relevant sodium chlorate market in this case and in your decision as to the effect on competition.

We simply did not want there to be any misapprehen-

sion that, agreeing we are dealing with only a single line of commerce, does not exclude consideration of these parts, if you will, or aspects of that single line of commerce in arriving at the decision with reference to relevant market and effect on competition.

Mr. Freed: Your Honor, I do not believe that there is any disagreement between the parties. As we indicated [fol. 196] in our opening statement, sodium chlorate is used in many places, and for many reasons, and I think the parties have been in agreement since the beginning that the Court should take into account all of the aspects of the sodium chlorate business in deciding the case, and we are certainly in agreement that each of the uses and each of the methods of packaging and each other element of marketing this product are relevant for the Court's consideration.

In light of the statements of counsel and the agreement of counsel, I would like to offer into evidence the General Stipulations as Plaintiff's Exhibit 414.

The Court: The General Stipulations, Set 1, are admitted in evidence, subject to the explanatory comments which I have just heard.

(The General Stipulations, Set 1, were received in evidence and marked "Plaintiff's Exhibit No. 414.")

Mr. Freed: The Government would now like to call as its first live witness in this case Mr. Fred Berggren.

EVIDENCE ON BEHALF OF THE GOVERNMENT

FRED H. BERGGREN, a witness called by the Government, being first duly sworn, testified as follows:

[fol. 197] Direct examination.

By Mr. Freed:

Q. Mr. Berggren, would you state by whom you are employed?

A. Yes. I am currently employed by Hooker Chemical Corporation, Niagara Falls.

Q. Niagara Falls, New York?

A. Yes.

Q. What is your position with Hooker Chemical Corporation?

A. At the present time I am supervisor of Inorganic Chemicals.

Q. Would you tell us what the scope of your responsibilities in that position is?

A. Well, my main job is to oversee sales, manage the sales of these chemicals, which were formerly Oldbury chemicals.

Q. And is sodium chlorate one of the chemicals under your supervision?

A. Yes, it is.

Q. Mr. Breggren, how long have you held your present position with Hooker?

A. As supervisor, I take it that would be the last title, that would be since 1956.

[fol. 198] Mr. De Lone: Would you suggest to the witness that he keep his voice up, Mr. Freed? It is a little hard to hear.

The Court: Mr. Berggren, the accoustics are bad here and it would be helpful if you would try to cast your voice so the people even in the back of the room can hear you.

The Witness: I will try to speak louder.

By Mr. Freed:

Q. Mr. Berggren, turning your attention back to your first employment by Hooker or a predecessor corporation, would you tell us what positions you have held in those organizations?

A. Originally I went to work for Oldbury Electrochemical Company in 1937. I was primarily sales and promotion at that time for sodium chlorate for agricultural use, and I held that job for three years, and then I was brought in and was made a part of our entire sales group. Most of my work was done on sodium chlorate, however.

Q. And beginning in 1940 what was the title that you held with Oldbury Electrochemical Company?

A. Just salesman.

Q. Salesman?

A. Salesman.

Q. Between 1940 and 1956 did you hold any other positions in Oldbury or its successor?

[fol. 199] A. Yes. I was assistant sales manager just before the merger, for two years prior to the merger in '56—from '54 on, for two years.

Q. And would you tell the Court what merger you are referring to?

A. It was the merger between Oldbury Electrochemical Company and Hooker Electrochemical Company at the time.

Q. And that merger took place when?

A. 1956.

Q. Beginning in 1957 can you tell us, sir, what experience you have had in the sodium chlorate field?

A. Leading up to 1957 from the very beginning?

Q. Yes.

A. Yes. From 1937 on I did a great deal of work in promoting the use of sodium chlorate as a herbicide, and up until mid-1945 I did considerable work on chlorine dioxide bleaching, that is, promoting of chlorine dioxide bleaching in pulp, and it involved sales as well as promotion work.

Q. And have your sales and promotion activities which commenced in 1945 continued up to the present time?

A. Yes, but not to the extent that I was doing it. We have many other people that are doing similar work now.

Q. Mr. Berggren, at the time you first came into contact with sodium chlorate can you tell us the principal pur-[fol. 200] poses for which sodium chlorate was used?

A. Yes. It was used in regular industry as an oxidant in dyes and colors and in refining certain metals. That was the primary use at that time.

Q. Did there come a time when the principal use of sodium chlorate changed?

A. Yes, sir. Well, shortly after 1937, say 1940, why, our sales were largely to the agricultural field, as well as railroad weed killing—in agricultural sale as a herbicide.

Q. Can you tell us the years during which that was true?

A. Well, it is still true today that a considerable part of it is used for weed killing except that it is not the largest use at the present time.

Q. At which point in time did the principal use of sodium chlorate for agricultural and weed-killing purposes change?

A. 1954 would be the year.

Q. And can you tell us what change occurred in that year?

A. Well, that was the year that a number of pulp mills converted over to chlorine dioxide bleaching. Two or three mills had already done so in '52 or '53. '54 seemed to be the year that a great number of mills converted their [fol. 201] bleaching sequence over to chlorine dioxide, and it was quite a development from then on.

Q. Can you tell us briefly what the purpose of chlorine dioxide bleaching is?

A. Well, the advantage chlorine dioxide has over certain other bleaching chemicals is that it doesn't have any deteriorating effect on the fibers of the pulp or it doesn't degrade the pulp.

The Court: If any of defense counsel wish to sit over here in the jury box while this witness testifies, it will be quite satisfactory.

Mr. De Lone: Thank you, sir.

Mr. Connelly: Thank you.

The Court: Now, despite the fact that counsel have moved, I am going to ask that you talk to the people in the back of the room. Throw your voice up as loud as you can.

The Witness: All right.

In other words, chlorine dioxide doesn't degrade pulp and you can bleach it to a high brightness without any bad effects.

Q. Do you know, sir, the extent to which sodium chlorate's use for the purpose you have just testified to is important today? Can you give us any measure of its importance?

[fol. 202] A. Do you refer to tonnage? Is that primarily what you are——

Q. Tonnage would be satisfactory.

A. Well, sodium chlorate for bleaching pulp and paper would be approximately 65 per cent of our sales on sodium chlorate at this time.

Q. Do you know, sir, approximately what portion of the total use of sodium chlorate today is devoted to pulp and paper bleaching?

A. Yes. Well, this would be my estimate that 50 per cent is used for that purpose.

Q. Can you tell us the total tonnage you have in mind in giving us that figure?

A. Yes, 52,000 tons annually.

Q. Does that represent the total estimated use of sodium chlorate for pulp and paper bleaching?

A. Yes. That is based on my estimate. It may not be absolutely correct.

Q. Mr. Berggren, can you tell us what uses apart from pulp and paper bleaching that sodium chlorate is used for today?

A. Well, pulp and paper would be number one in tons; then would come agricultural use, and uses as a herbicide, and in that category I would put railroad weed killer; then [fol. 203] would come—in tonnage would be in uranium processing.

Q. On the basis of your familiarity with the sodium chlorate business can you tell us where in the United States sodium chlorate is consumed for the various purposes you have outlined?

A. Would you be referring to our sales or a total use?

Q. The total use.

A. I would say the southeast as far as pulp and paper is by far the largest use and the principal area; then the midwest is considerable for agricultural use and for railroad weed killing. That would be pretty much nationwide, as I see it.

Q. With respect to the uranium industry where would the use take place?

A. That would be in Colorado, Wyoming, and New Mexico, and eastern Utah.

Q. With reference to the pulp and paper industry are there any areas apart from the southeast that you have mentioned where sodium chlorate is used by pulp and paper companies?

A. Yes. There are several mills in New England, and there is one in Michigan, and one in Wisconsin at the present time; and there are several out in the northwest.

[fol. 204] Q. Mr. Berggren, would you tell us where and how Hooker Chemical Corporation entered the sodium chlorate business?

A. You are going back to the original company, I take it. Well, Oldbury Chemical Company was formed in 1896 at Niagara Falls, and it was there we started to make sodium chlorate.

Q. Did there come a time when Oldbury commenced the manufacture of sodium chlorate at a location other than Niagara Falls?

A. In 1954 we came into production with our Columbus, Mississippi, plant, which was built exclusively at that time for sodium chlorate production.

Q. Could you tell us how large Oldbury's plant at Columbus, Mississippi, was when first constructed?

A. Initially twelve thousand tons.

Q. At the time Oldbury's plant was built at Columbus, Mississippi, can you tell us what other activities in the area of that plant Oldbury was engaged in?

A. At the time that the plant was built?

Q. Yes.

A. That was primarily the only activity we had in that area. We had one other product that was being sold in the south which was manufactured at Niagara Falls and has since been transferred to Columbus.

[fol. 205] Q. What was the other product?

A. Phosphorous pentasulphide.

Q. Was that product being sold in the south prior to the construction of the Columbus plant?

A. Yes, it was.

Q. Can you tell us the approximate volume of sales of that product?

A. At that time it was about 800 tons.

Q. Can you give us a dollar measure of those sales?

A. At that time it sold for 13½ cents a pound.

Q. At the time Oldbury's plant was constructed at Columbus, Mississippi, did Oldbury have any other facilities at that location?

A. Not at Columbus, Mississippi; no, we did not.

Q. Was your plant constructed in relation to any other plant?

A. No.

Q. Do Oldbury's facilities at Columbus, Mississippi, today make any other product apart from sodium chlorate?

A. This phosphorous pentasulphide. We made it down there now.

Q. Apart from the two products you have mentioned, does Hooker or Oldbury Division today sell any other products in the south apart from sodium chlorate and phos- [fol. 206] phorous pentasulphide?

The Court: What is the exact name, phosphorous pentasulphide?

The Witness: Yes, phosphorous pentasulphide.

By Mr. Freed:

Q. Other than sodium chloride and phosphorous pentasulphide.

A. Would you repeat that question? I didn't quite understand it.

(The question was read by the reporter as follows:)

"Apart from the two products you have mentioned does Hooker or Olberry Division today sell any other products in the south apart from sodium chloride and phosphorous pentasulphide?"

A. Yes, we do, in a minor way. We have several minor chemicals we sell down there. I am not familiar with all of them because we have several divisions in our company and I am not familiar with the other divisions.

Q. Mr. Berggren, where is the output of Hooker's Columbus, Mississippi, Plant sold, confining your answer to sodium chlorate?

A. Yes, it is sold in the southeast, the mid-west, in this area, even on up into New England, and the far west. We [fol. 207] ship also to Southern California and the Colorado Plateau area.

The Court: These shipments are from Niagara Falls?

A. This is just Columbus he was mentioning.

By Mr. Freed:

Q. Did there come a time after the construction of the plant in 1954 when Hooker expanded its facilities for making sodium chlorate at Columbus?

A. Yes. The Columbus plant has been expanded three times. The first expansion was started before the plant was completed, actually, and the second one followed a year after, and the third one a year after that. It expanded three times.

Q. What is the capacity of your plant today?

A. Thirty-two thousand tons.

Q. Would you describe for us the sales force that Hooker uses to market sodium chlorate from its Columbus plant?

A. Yes. Sodium chlorate comes under the Eastern Chemical Division of Hooker. In that division we have 22 salesmen, and they all have some part in selling chlorate from the Columbus plant. However, we do have a specialist, a salesman that is located in Mobile, Alabama, who spends all his time just calling on the pulp and paper accounts in the southeast. Besides a sales force we have about eight other people that spend some time on this work not on sales but in the technical services, and so forth.

[fol. 208] Q. When you referred to the southeast, Mr. Berggren, can you tell us which states you have in mind?

A. Yes. That would be Texas, Louisiana, Arkansas, Mississippi, Alabama, Florida, Georgia, North Carolina and South Carolina, and that is about it.

Q. With reference to sales to pulp and paper companies in those states can you describe for us the size of your sales force?

A. We would have in that area four different salesmen calling in that area.

Q. With reference to sales of sodium chlorate to pulp and paper companies in an area, how many of your salesmen participate?

A. At the present time—We have made some changes—we have just this one man calling on all the accounts. In other words, he is specializing in pulp and paper sales.

Q. Who is this one salesman?

A. C. R. Daving.

Q. Mr. Daving's sales base is located where?

A. Mobile, Alabama.

Q. Mr. Berggren, would you tell us how large a company Olberry was when it built the Columbus, Mississippi, sodium chlorate plant?

[fol. 209] A. It would be approximately $14 million sales, within a million dollars or so.

Q. Was that the size of the Olberry organization at the time of the merger with Hooker?

A. Approximately, yes.

Q. Mr. Berggren, do you personally in your position today call on pulp and paper companies who are customers for sodium chlorate?

A. Yes, I do it quite regularly, in fact.

Q. For how many years has it been a regular part of your business?

A. Pulp and paper, it began in the mid-forties that I started to call on them.

Q. Can you tell us approximately how many pulp and paper companies you called on in connection with solicitations of sodium chlorate sales?

A. Yes, it would be roughly thirty.

Q. In the course of your sodium chlorate solicitation experience has the subject of trade relations ever come up?

A. Yes, I would say it has.

Q. Would you tell the Court what trade relations means?

A. As I understand trade relation, if a company is selling another company a product the other company in turn requires something this other company buys, you buy from them; sort of a trade balance, in other words; purchase [fol. 210] from another company whom you are buying from or selling to rather.

Q. Can you differentiate for us if there is a difference between the practice of trade relations and the practice known as reciprocity?

A. This would be my definition: Trade relations would be, as I said, everything being equal, why you would purchase material from somebody you sell to, and do that willingly. I think reciprocity, probably the way I feel about it would be more or less pressure brought to bear, where everthing may not be equal.

Q. Pressure brought to bear in what way?

A. In other words, you would buy material from a company that you would not normally purchase from, I imagine, if you didn't have to.

Q. Under what circumstances would you buy from a company you would not ordinarily buy from?

A. Not always things are equal, you know, service and soforth. You might have to buy in spite of that.

Q. I wonder if you could give us a hypothetical example of the way in which reciprocity works in order that the nature of the process may be clearly shown to the Court?

A. Assuming a company sold another company a product and gave excellent service, and so forth, then this [fol. 211] other company that they sold to purchased materials that this other company manufactured, it is possible that this company would not want to change its source of supply, the service has been good and so forth. The other company can say, "Unless you purchase from me we will stop buying from you." That is my interpretation of what it could be.

Q. On the basis of your selling experience in the sodium chlorate field do you know, sir, whether the practice of trade relations or reciprocity is a factor in the sodium chlorate business?

A. It is not as far as our company is concerned because we sell or purchase very little from our pulp and paper accounts. In other words, our purchases from them are very small, and our sales are large, so it does not play a part in our sales or purchases.

[fol. 212] By the Court:

Q. How about the railroads?

A. I do not know of anything there. When we ask for rates, lower rates, that is out of my category. I do not really know about it. We do not deal directly with the railroads, anyway, on this railroad weed killing, by the way. It is usually done by another party that buys the chemicals and does the application, so we do not come into contact with them.

By Mr. Freed:

Q. Does the Hooker Chemical Corporation use its purchases from pulp and paper companies as a means to encourage sales of sodium chlorate?

Mr. De Lone: If your Honor please, I object to that question. I cannot see its relevance to this case, what

Hooker Chemical Company uses to get its sales or effect its sales.

The Court: Read the question.

(The question was read by the Reporter.)

The Court: I think you had better clarfy the question, and then you re-state your objection as clarified if it is objectionable.

If the question is: "Do you go to paper companies and say 'If you want us to buy paper you will have to buy [fol. 213] sodium chlorate from us.'"

Mr. Freed: Exactly, your Honor.

Mr. De Lone: I object to that as irrelevant and also as covered by his previous answer. He already said the Hooker Company does not use trade relations in its business.

The Court: What is the relevancy, Mr. Freed?

Mr. Freed: Your Honor, I would like to bring out from this witness the extent, if any, to which the practice of reciprocity or trade relations is used in the business of selling chemical products.

The Court: I understand the witness has said that they do not use reciprocity or trade relations in dealing with pulp and paper industry. I put the question as to railroads and he said no as to railroads.

So far as the objection as to one of cumulativeness, I overrule it. I will evaluate irrelevancies as I hear the testimony.

The Witness: To answer that question, then, as far as Hooker is concerned on sodium chlorate, we have no trade relations. I mean our purchases are so small they are almost insignificant. The fact is it would be embarrassing to even mention it.

By Mr. Freed:

Q. In the course of your activities in selling sodium [fol. 214] chlorate have you encountered situations in which the factor of trade relations is made a part of the discussion or solicitation effort with pulp and paper companies?

Mr. De Lone: In the light of the previous answer I renew my objection.

Mr. Connelly: I would like to add the objection that it calls for hearsay, if your Honor please, the witness having testified——

The Court: What do you have to say about the hearsay objection?

Mr. Freed: Your Honor, the hearsay objection I believe would normally apply to a situation of this kind were it not for the fact that the witness is a man who has been in this business for a great many years, a principal part of whose activities is the solicitation and selling of sodium chlorate, and I believe that he is competent to testify as to the practices that are employed in that business, or the factors.

The Court: If his testimony is going to be based on what someone else told him the practices were, it seems to me it is clearly within the hearsay rule. You could develop as a preliminary matter the basis of his information concerning these practices pursued in the sodium chlorate business.

I will sustain the objection to the question.

[fol. 215] By Mr. Freed:

Q. Mr. Berggren, do you have any knowledge or information concerning the extent, if any, to which trade relations is a practice which is important or involved in the sodium chlorate business?

A. That would be what I have been told. There are a couple of cases where our contracts for this last year were less than they were the previous year, but on what basis the customer used in proportioning out that way, it is hard for me to tell. I was told they——

The Court: Just a moment. That goes to the objection.

The Witness: That was the other question.

The Court: You were told by your customers or the former customers why you lost business to other competitors.

The Witness: Exactly.

Mr. Freed: Your Honor, it is the Government's position that the truth of any declarations made to Mr. Berggren in the course of his selling activities as to trade relations or reciprocity playing a part or being a factor may not be shown by his testimony, but certainly the extent to

which this factor is used in direct contacts with Mr. Berggren as a reason for giving him or not giving him business is something within his own knowledge.

[fol. 216] The Court: It seems to me the only significance the statements could have is to establish their truth. If the statements are not true then it seems to me the testimony is not significant.

I will not permit you to go into this unless you lay some preliminary foundation to show firsthand knowledge.

There is no pending question so you go ahead and put your question. I will rule on the objections.

Do you want a five-minute recess?

Mr. Freed: Yes.

(At this point a short recess was taken.)

Mr. Freed: Does your Honor wish me to proceed with questioning?

The Court: I wish you would proceed with your examination of the witness in any way that you choose.

By Mr. Freed:

Q. Perhaps this is repetitive, Mr. Berggren, but has the subject of trade relations been injected in any of your sales efforts in connection with selling sodium chlorate?

A. I have been told that that is a reason.

Q. In cases in which you have had conversations about the subject has Hooker in fact——

The Court: Conversations with whom, his superiors, or with counsel, or with whom are you speaking now?

[fol. 217] By Mr. Freed:

Q. Conversations with whom are you referring to, sir?

A. The customers.

Q. People in what position in the customer corporations?

A. Purchasing departments.

Q. In those situations in which conversations have related to trade relations or reciprocity has Hooker in fact been affected in its business?

Mr. Connelly: I object to that as calling for a conclusion.

By Mr. Freed:

Q. In such cases has Hooker's sales to these companies increased or decreased?

Mr. Connelly: I make the same objection, it seems to me this can have only one purpose, which is to attempt to get in under the guise of practices what can really be nothing more than hearsay for whatever reasons may be expressed why a given customer may not renew an order.

The Court: It seems to me that the most you can get from this witness is that he talked to a customer about trade relations of reciprocity and his business decreased. It seems to me that the testimony or any such testimony is going to be so ambiguous as to be meaningless.

[fol. 218] Actually what you are trying to establish, I take it, is that the witness has lost business because in fact this trade relation or reciprocity method of doing business has persisted between customers of Hooker and competitors of Hooker.

It seems to me if you are going to prove it you ought to prove it by people who have firsthand knowledge of the fact, which would be the customers, that some of these conversations went on in the presence of Mr. Berggren.

I sustain the objection.

By Mr. Freed:

Q. Have any conversations which related to trade relations between pulp and paper customers of your company and competitors of your company taken place in your presence?

A. No.

Mr. Freed: Your Honor, the Government is in agreement with your analysis of what it is trying to prove and the evidential problems involved. It was our contention that there are two ways in which to put in the influence of trade relations on sodium chlorate business. One is to produce representatives of the industry to testify about their actual use, the actual use in the case on each customer of trade relations. The alternative way, which we contend is permissible for an expert in the business, is for someone [fol. 219] who is completely familiar with the selling of

sodium chlorate to testify about the experiences and the problems that he encounters in attempting to sell sodium chlorate.

The Court: It seems to me that this area of testimony is essentially fact testimony. Hooker lost business which it had because its customers were prevailed upon by competitors to buy from them through the use of trade relations or reciprocity. It does not take an expert to testify to that. The customer would not have to be an expert to testify to it. That is my reaction to proving this general subject matter in this area.

You ask your question and I will rule on it.

By Mr. Freed:

Q. Mr. Berggren, you previously testified to the sales force that Hooker has in selling sodium chlorate. I believe you mentioned also the technical force. Would you tell the Court what kind of technical services Hooker renders in connection with its sale of sodium chlorate?

A. Yes, we have a Dr. Rapson who is considered an expert on chlorine dioxide bleaching and generation as a consultant. Then we have a gentleman that is full-time manager of Pulp and Paper Technical Service. Then we have two men in market development that spend a part of their time on the problems along this line. We have an- [fol. 220] other three men in market development that spend part of their time on certain problems in this field. Then we have two agronomists out in the field selling sodium chlorate, who not only sell, but they are also technical service people.

Q. In terms of full-time employees with the full time of employees being devoted to technical services can you tell us how many full-time men on an equivalent full-time basis Hooker has?

A. I would say between three and four full-time men on technical service.

Q. You made reference earlier, sir, to the sale of a minor volume of chemicals in the south. Would you tell us how large Hooker's sales in the south apart from sodium chlorate are today?

A. I would not have that exact information. All I could say in a general way is that they would be small, because

one other salesman, outside of this expert on pulp and paper sales, handles the whole southeast, so sales are small and the volume is small. They are on a variety of minor chemicals.

Q. Your testimony is that there is one salesman who devotes himself to the pulp and paper sales in the southeast?

A. Yes, and another industrial salesman who covers approximately the same area as this fellow does.

[fol. 221] Q. In sales of chemical other than sodium chlorate?

A. Yes, that is right.

Q. In what geographical area or areas have you personally sold or solicited sales of sodium chlorate?

A. I would say the entire United States, outside of the northwest.

Q. Who are Hooker's competitors in the sodium chlorate business?

A. Well, American Potash, Pennsalt, and Olin Mathieson.

Q. Can you tell us the area or areas in which competition from Pennsalt has been encountered?

A. From Pennsalt, yes, we have encountered them in the midwest and in the area I spoke about earlier. The agricultural area in the midwest, Kansas, Nebraska, Iowa, and those states; and in the uranium area we mentioned earlier, Colorado and Wyoming.

Q. Have you encountered Pennsalt in any other areas?

A. We have encountered them in one account in the southeast.

Q. Can you tell us, sir, for how long a period of time Hooker has encountered Pennsalt as a competitor in sodium chlorate?

A. Well, that is a little difficult to answer. I would say in the midwest the last six years.

[fol. 222] Q. In the uranium industry?

A. Well, about the last three years when we started to develop some business out there ourselves. They were already in there.

Q. From which shipping point does Hooker sell sodium chlorate to the midwest and the uranium states?

A. To the uranium area it is all shipped from Columbus,

Mississippi, and most of it to the argicultural area in the midwest is from Columbus also.

Q. Have you made any sales to the West Coast of sodium chlorate?

A. Yes, we have. The last three years we have shipping to southern California.

Q. Where did those shipments emanate from?

A. Columbus, Mississippi.

Q. Can you give us a dollar volume figure or quantity figure for those shipments west?

A. Yes, I can give you that. In 1960 there were 1700 tons shipped to southern California.

Q. Approximately how large are these sales to the uranium states of the west?

A. Are you speaking of our sales?

Q. Yes, sir.

A. Roughly, a thousand tons.

[fol. 223] By the Court:

Q. A thousand tons a year?

A. Yes, annually.

By Mr. Freed:

Q. Mr. Berggren, has your plant at Columbus, Mississippi ever operated at capacity?

A. Yes, it has. It has usually operated at capacity since it was built.

Q. Is it operating at capacity at the present time?

A. At the present time it is.

Q. Is the full output of the Columbus, Mississippi, plant presently being sold?

A. No. We are stockpiling a considerable tonnage right now.

Q. Have you always stockpiled a considerable tonnage or is this a new development?

A. No, we have in off seasons stockpiled considerable tonnage. In other words, the agricultural use is seasonal. As a result we do stockpile a considerable quantity in the off season.

By the Court:

Q. Do your annual sales from the Columbus plant equal your annual production?

A. Almost. Last year, 1960, was 29,500,000 pounds [fol. 224] sales against 30,500,000 pounds production.

Q. You wouldn't want it to run much closer than that?

A. The closer the better, of course, in an operation like that; but we would not complain on an operation like that.

By Mr. Freed:

Q. Has there been any change in the success of your selling efforts within the past year?

A. Well, we have had to increase our selling efforts, not only selling efforts, but service. We have increased our sales and service. We are going to put in facilities for pulp and paper research.

Q. Has there been any change in the level of Hooker's sales of sodium chlorate to pulp and paper companies in the southeast within the past year?

A. There is a slight decrease from 1960, yes.

Q. In the selling efforts in which you have been engaged within the past year has there been any indication of a change in Hooker's expected sales of sodium chlorate in the southeast?

Mr. De Lone: Might I have that question read?

(The last question was read by the Reporter.)

Mr. De Lone: I object to that, sir. Has there been any indication of a change? I should gather we are going [fol. 225] to ask him to make some sort of prognostication. We certainly ought to know on what basis we are going to have such a prognostication before the ultimate question is asked.

The Court: I overrule the objection. You can develop the infirmity on cross-examination.

By Mr. Freed:

Q. Have you begun soliciting sales of sodium chlorate for 1962 delivery?

A. Not yet, but we do that in the contract season, and that is about to begin. We have not started yet.

Q. Have you had any preliminary efforts in the direction of selling sodium chlorate for the coming year?

A. I have just made some estimates on my own as to what the tonnage would be.

Q. What did those estimates show?

A. It showed that there would be a slight decrease in 1962.

Q. Can you tell us the basis on which you estimated a decrease for 1962?

A. I think the new production is going to have an effect. I mean the very fact that there are new plants coming in will naturally have an effect on our sales.

By the Court:

Q. What do you mean by new production?

[fol. 226] A. Well, the plant at Calvert City will be a new producing plant.

Q. You mean the Penn-Olin plant?

A. Yes. And then there is another plant also.

Q. Which is that?

A. That is the Columbia Southern plant in Louisiana, in Lake Charles.

By Mr. Freed:

Q. In making your estimates for 1962 have you reached any conclusions with respect to the ease or difficulty that Hooker will have in selling the full capacity output of its Columbus plant?

A. We would be very happy if we could sell in 1962 the capacity that we have. We do not anticipate we will.

Q. In light of your last statement have you made any plans in terms of the scope of your sales operations to compensate for any change in sales forecasts?

A. We have not made any further changes in the last few months, but we did some time ago rearrange our selling force, the pulp and paper salesmen specialists, and we have hired a pulp and paper manager for our service department, pulp and paper service department.

Q. Have you made any change in plans with respect to

the geographic areas in which you will market the ouptut [fol. 227] of your Columbus plant?

A. No definite plans have been made that have not been in effect for the last year.

Q. Can you tell us whether any change in plans is being considered in respect to the geographical scope of your sales activities?

Mr. De Lone: Objected to, sir. In the light of his previous answer that they have not made any changes I can't see any relevance to what they may be thinking about doing some day in the future.

The Court: I overrule the objection.

By the Court:

Q. Do you want the question read back?

A. Yes.

(The question referred to was read by the Reporter as follows:)

"Question: Can you tell us whether any change in plans is being considered in respect to the geographical scope of your sales activities?"

The Court: I wonder what some significance of some mental operation may be? Maybe they are being considered, maybe they are not, and what conclusion will be arrived at as a result of such consideration. It seems to me your are getting into a very conjectural speculative [fol. 228] area. I sustain that objection.

We will take a five-minute recess.

(At this point a brief recess was taken.)

By Mr. Freed:

Q. Mr. Berggren, in the manufacture of sodium chlorate what are the important cost elements?

A. Electric power is number one, and the principal one, and I would say sodium chloride and transportation would be second.

Mr. De Lone: Would you read that last answer?

(The answer was read by the Reporter.)

By Mr. Freed:

Q. Would you re-state your answer as far as cost elements are concerned?

A. Yes. We are talking about cost of producing sodium chlorate?

Q. That is correct.

A. Electric power is number one cost.

Q. With respect to the cost——

By the Court:

Q. What other important elements are there that you mentioned earlier. Sodium chloride?

A. And the transportation of sodium chloride.

Q. And the transportation of sodium chloride?

[fol. 229] A. That is correct.

By Mr. Freed:

Q. Is sodium chloride salt used to produce sodium chlorate?

A. That is correct.

Q. With respect to electricity would you tell us how you contract for electricity to operate your plant?

A. To my knowledge we contract a year in advance or more than a year in advance for the power.

Q. What is the basis on which you calculate the volume of power for which you will contract?

A. That is done on the basis of how you expect to operate, at what rate you expect to operate for that period of time.

Q. And are your calculations made on the basis of capacity or some other basis of operation?

A. Capacity.

Q. If your sales fall below capacity can you tell us how that may affect the power costs of operating your plant?

A. It definitely would affect our costs, because you would be paying for power that you contracted for and are not using.

By the Court:

Q. You contract for your power on a flat rate regard-
[fol. 230] less of a certain minimum?

A. There are certain minimums that you contract for.

Q. And the minimum is based on an assumed full production?

A. Well, we try to estimate our capacity or production before we contract.

Q. But your minimum is not based on your estimate or is your minimum based on the estimate? Is this something that is subject to a written contract of some sort?

A. Yes, it is.

Q. Have you seen it?

A. No, I have not. I am not that familiar with it to discuss it actually.

By Mr. Freed:

Q. At the present time are you committed to pay for power for capacity operation irrespective of whether the plant operates at capacity operation?

A. Whether we have to pay for the capacity of the power I am not familiar. I am not that sure of the contract.

Q. In the event that your current sales activity does not match the capacity ouput of the plant would you continue to stockpile sodium chlorate?

A. To a certain minimum. I mean when our storage capacity is filled then we have to do something about it, [fol. 231] Mr. Freed. To cut back production could be costly.

Q. Is there an alternative to cutting back production if you were unable to continue to sell capacity in your present market areas?

A. Unless we can sell it in other areas.

Q. Have you given consideration to selling sodium chlorate in other areas?

A. We are giving it consideration, yes.

By the Court:

Q. How about cutting the price? Mightn't you be able to move it if you did that?

A. It so happens that cutting the price of sodium chlorate will not increase its demand.

Q. Not the over-all demand, but it might increase your opportunity to sell, might it not? If you gave it away—you can give it away. no doubt, against any competitive effort; wouldn't that be so?

A. I would say so, yes.

[fol. 232] By Mr. Freed:

Q. Mr. Berggren, have you given any consideration to increasing the sale of sodium chlorate in areas outside the Southeast?

A. Well, it is just now being considered. We are going to sell in all areas of the United States that we can get business.

Q. Have you given any consideration, Mr. Berggren, to the relative economics involved in selling your capacity throughout the United States or operating at less than capacity in a more limited geographical area?

A. Well, that is a possibility. In other words, if you can't sell to capacity, then you have to cut back your production. But sometimes it is not always easy to sell in other areas where transportation over long distances becomes a problem and deliveries and on schedule, and so forth.

Q. Have you made any studies to determine whether it would be to the advantage of your company to increase its sales in distant areas as opposed to cutting back on production or selling in closer areas?

A. We are considering that; we are giving it consideration. If we can't increase our sales, we will have to cut back. There is no other alternative.

[fol. 233] Q. Have you made a determination where you will attempt to sell sodium chlorate in the Western part of the United States instead of cutting back on production for sale closer to Columbus?

A. We have been giving it consideration but have no

definite plans as to how we are going to go about it yet. No active campaign has been initiated.

Q. Mr. Berggren, has Hooker sold any sodium chlorate to Olin Mathieson?

A. Yes, we have, for a good number of years.

Q. From which plant of Hooker have shipments of sodium chlorate been made to Olin?

A. From the Niagara Falls plant.

Q. Has there been any change in Hooker's sales of sodium chlorate to Olin within the past few years?

A. We have sold them less this year than we did last year. Of course the year is not over with. I don't know how much it will come to.

Q. Can you give us the magnitude of sales in 1960 by Hooker to Olin?

A. At the rate we have shipped in 1961 for the nine-month period of '61, it is at the rate of 50 per cent of what we did in 1960.

Q. And have you made any projections with respect [fol. 234] to Hooker's sales of sodium chlorate to Olin for 1962?

A. We haven't included them in our estimate, no.

Q. Can you tell us why you have not included them?

A. We just feel that with their own plant they will be supplying their own requirements.

Q. Can you give us, sir, any measure of the importance of Olin as a customer for Hooker's Niagara Falls sodium chlorate plant?

Mr. Connelly: I will object to the question as calling for an extremely broad conclusion unless there is some definition of what counsel means by "importance".

The Court: Well, I had assumed that your question, Mr. Freed, called for some sort of a percentage of sales which were being taken by Olin Mathieson, something of that sort.

Mr. Freed: I would hope that the witness would explain the basis.

The Court: I will overrule that objection.

A. I could answer it this way, that they are our largest customer on sodium chlorate out of our Niagara Falls plant as of 19—well, that would be true for this year as well.

Q. Did you say, sir, that Olin is the most important [fol. 235] customer for the Niagara Falls plant?

Mr. Connelly: I object to that again.

Mr. Freed: Would you read the answer, please?

(The Reporter read the following:

"Answer: I could answer it this way, that they are our largest customer on sodium chlorate out of our Niagara Falls plant as of 19—well, that would be true for this year as well.")

By The Court:

Q. You started to say for nineteen something or other?

A. I was going to say 1960, but 1961 would apply as well.

Q. Do you have any idea what percentage of your production was taken in 1960, will be taken in 1961, by Olin Mathieson, of sodium chlorate from your Niagara Falls plant?

A. Percentagewise it would be very small. I couldn't tell you what the percentage would be, but it would be very small, percentagewise.

Mr. Freed: Your Honor, I believe that data which has already been stipulated to by the parties will disclose that information.

By Mr. Freed:

[fol. 236] Q. Mr. Berggren, is Hooker continuing today to sell sodium chlorate west of the Rocky Mountains?

A. Yes, we are.

Q. Does your company have any plans with respect to continuing or abandoning sales of sodium chlorate to the western part of the United States?

A. We don't have any plans of abandoning it. We have plans to increase our activity. We haven't initiated them as yet.

Q. And from which shipping point will those sales emanate?

A. Columbus, Mississippi.

Mr. Freed: Would your Honor indulge me a moment?

The Court: Yes.

Mr. Freed: The Government has no further questions, your Honor.

[fol. 237] Cross-examination.

By Mr. De Lone:

Q. Mr. Berggren, I understand from your testimony that quite recently Hooker has revamped its sales effort with reference to sodium chlorate. Is that correct?

A. Just making a specialist out of one of the salesmen that was in that area, making him a pulp and paper specialist. That was the major change, yes.

Q. You are going to put in research facilities for pulp and paper customers which you did not have before?

A. That is right. We are putting in a pulp paper laboratory. That is in the works.

Q. You are giving consideration to whether you will attempt to market your product more broadly west of the Rocky Mountains. Is that right?

A. That is correct.

Q. What is it that has induced you to take these steps?

A. To keep our plant operating as near capacity as possible.

Q. In the past few years it did operate at capacity, did it, until your current projection?

A. Very near capacity, yes.

Q. Your projections for what, 1961 or 1962?

[fol. 238] A. We are talking about Columbus, Mississippi, now,

Q. That is right. I understand you are talking mainly about Columbus.

A. That is right.

Q. Your projections, is it your projections for 1962 which contemplate the possibility you will not work at capacity?

A. Our projection for 1962.

Q. These efforts are to fill out your production from Columbus so it will be at full capacity?

A. As near capacity as possible. That is right.

Q. What is it that has brought you to the conclusion that you will not sell as much in 1962 as you did in 1961, or as you seem to be selling in 1961 so far?

A. Two new producing points is the answer to that.

Q. One of them is at Penn-Olin's plant at Calvert City?

A. Right.

Q. That is the first to come actually on stream of these two new plants to which you have reference?

A. That is right.

Q. The second is a plant of the Pittsburgh Plate Glass at Lake Charles, Louisiana?

A. That is right.

[fol. 239] Q. When do you anticipate this will have any impact on your sales potential?

A. We think the latter part of 1962.

Q. Then the year 1962 is the first when you have felt this impact from Penn-Olin, or think you will feel it. Is that right?

A. We have felt it a little this year, 1961.

Q. Not to the extent of preventing you from selling at your capacity production from Columbus, Mississippi?

A. We have been running the plant at capacity, but we have stockpiled considerably in the last few months.

Q. Prior, then, to the current year you made reference to a Pennsalt customer or some knowledge of a Pennsalt activity in Florida. What were you referring to?

A. Right. Shipments made to Foley, Florida.

Q. That is the plant of the Buckeye Company?

A. That is correct.

Q. Was that the only time that you felt Pennsalt in the southeast, prior to Penn-Olin?

A. Talking about pulp and paper now?

Q. Yes.

A. Yes. That is correct.

Q. That had no impact on your ability to sell your total production from Columbus. Is that right?

[fol. 240] A. No.

Q. Except this isolated matter at Foley, Florida?

A. That is right.

Q. In addition to streamlining, if that is the correct word, your sales force and augmenting your technical services, and considering the possibility of more broadly marketing your product, have you not also since Penn-Olin was announced endeavored to sign up five-year contracts for your customers?

A. That is correct.

Q. That, plus these other items, were measures which Hooker has taken to meet the competition from Penn-Olin. Isn't that right?

A. That isn't exactly all that is connected with it. We attempted or at least I attempted the year previous to offer these five-year contracts with ceiling prices to protect our customers because they seemed quite concerned as to what the price of chlorate was going to be in the next few years. Actually quite a few of our accounts were thinking of converting, were concerned what the price of chlorate might be two or three years hence because that could affect their decision to go into chlorine dioxide bleaching.

Q. Is it a fact that that price has been substantially the same for the last three or four years, there has been no price increase in sodium chlorate in the territory which you [fol. 241] have been selling?

A. That is correct. Yes.

Q. And, in fact, it was higher back in 1954 when you built your plant at Columbus, Mississippi, than it has been since that time. Isn't that also correct?

A. That is true.

Q. Again turning to the five-year contracts who is Mr. Wilcox?

A. He is the secretary of the company, and legal counsel.

Q. I call your attention to a letter from Mr. Wilcox to the Department of Justice in which this question was asked:

"What measures has Hooker taken to meet Penn-Olin competition?"

A. Right.

Q. This is Mr. Wilcox's reply, July 24, 1961.

"We have provided——"

Mr. Freed: Your Honor,——

The Court: Just a moment.

Mr. Freed: I object to the counsel reading of this letter into evidence, not on the grounds of any facts stated therein but rather on the grounds of the basis upon which the letter and the information contained in it were turned over to counsel.

[fol. 242] As your Honor will recall there was a large

category of information turned over to the department on a confidential basis, and the parties undertook to reach an agreement with respect to that material which could be used so as not to prejudice any third party to this case.

The Government would like to record its objection at this time to compromising the basis upon which third parties disclosed confidential information to the Government, and the Government in turn disclosed that confidential information to counsel for the defendants, but not defendants themselves.

The Court: As I understand it, this letter is not one which is in evidence.

Mr. Freed: That is correct.

Mr. De Lone: So that——

The Court: What do you have to say to this objection to the use which you make of this letter?

Mr. De Lone: My purpose is to pose a question which incorporates an answer previously given which does not, as I understand our discussions with counsel for the Government and counsel for Hooker, in any way involve the areas of confidentiality which have previously been involved. I am referring only to question and answer number fifteen.

The Court: Why don't you show Mr. Freed exactly what portion of that letter you propose to use in your question.

[fol. 243] Mr. De Lone: I did not have any purpose to offer the document itself in evidence apart from this reason.

Mr. Freed: I wonder if counsel for Hooker, who is present in the courtroom, just for the purposes of protecting his company's interest in trade secrets and confidential data might have an opportunity to examine the letter, because the only objection, as I said, the Government has is to third parties.

The Court: Show Hooker's counsel the portion of the letter you propose to read as the basis for your question.

(Pause)

Mr. De Lone: I may state to the Court that counsel for Hooker has no objection to my continuing with the question that I started so far as this particular item in the letter is concerned.

The Court: Begin your question anew, if you will.

By Mr. De Lone:

Q. Mr. Berggren, I call your attention to the letter from Mr. Wilcox, whom you previously have described, to Mr. Kirkpatrick, the Department of Justice, dated July 24, 1961, which reads in part:

"Question: What measure has Hooker taken to meet Penn-Olin competition?"

And the answer:

[fol. 244] "We have provided more intensive sales coverage by the addition of two salesmen and have increased our technical service effort by the addition of one technical service man. We have offered pulp and paper manufacturers a firm price for a period of five years and have made available to them without royalty a license of Hooker's new chlorine dioxide generating process and certain other patents useful in pulp and paper manufacturing."

Can you tell me whether to your knowledge that answer is correct with reference to both these five-year contracts and to the other matters recited in the answer?

A. Well that report was made by a market analyst of ours, and I had nothing to do with that being prepared.

Q. I simply want to know whether it is accurate. That is all. If it is not you could tell me so.

A. I would gather they felt from that—they felt the only reason it was done, you know what I mean, but there were other reasons.

By the Court:

Q. Would you like to look at the letter?

A. I recall it.

Q. Any paper you are examined on and you would like to see——

[fol. 245] A. I recall it very well.

Q. —you make it known, your desire, and it will be placed in front of you.

A. As I mentioned before this five-year contract with a firmer price was almost put in effect a year previous,

part of it we didn't get an O.K. on in time to offer it that year. We think it is service to the customers, they know what the price is going to be five years hence. That was quite a concern to them, and that is one reason.

The Court: Just a moment.

Mr. Freed: I wonder if the Reporter would read back the answer because I couldn't hear.

The Court: Read the question and read the answer.

(The question and answer were read by the Reporter.)

By Mr. De Lone:

Q. Do I understand from your answer, then, that in addition to it being a measure to meet Penn-Olin competition there were these other considerations of stability of price to the customer which induced you to make these five-year offerings?

A. Yes. That is correct.

Q. I take it from what has happened to your projections for 1962 that you were not successful in all instances in obtaining a five-year contract?

[fol. 246] A. We obtained several. Yes.

Q. Several. If I might go back a moment, your technical service force which you described earlier, I take it you feel this is an essential to doing a good selling job in sodium chlorate, to have a good technical service force?

A. We feel that way, yes.

Q. With reference to the southeastern territory, as I understand it your current arrangements, you have only one salesman who is full time on sodium chlorate in the southeast?

A. In the southeast. That is right.

Q. Where is he located?

A. Mobile, Alabama.

Q. Are his initials "C. R. D."?

A. "C. R. D.," yes.

Q. You also have a salesman in Mississippi, and one in North Carolina, have you not?

A. That is correct.

Q. Their principal job, I take it, is not the selling of sodium chlorate?

A. It is becoming less and less for them as far as the pulp and paper industry is concerned.

Q. Previous to the reorganization that you have referred to, these recent efforts to streamline your setup, had all three of these salesmen concerned themselves with [fol. 247] sodium chlorate?

A. That is correct, in all industries; with all industries in their area.

Q. I assume that to the extent the gentleman in Mississippi or the one in North Carolina learned of the need of sodium chlorate from calling on customers they are willing to discuss it with the customer?

A. That is one of their jobs. Yes.

Q. When you erected the plant in Columbus, Mississippi, which came on stream, I think, in 1954——

A. That is correct.

Q. —was it the projected demand in the southeastern area for the pulp mills that induced you to move your plant down there or to erect a plant there?

A. That is right.

Q. The power rate was cheaper than Niagara?

A. That is correct.

Q. And the rate costs to the pulp mills were much less than from Niagara Falls?

A. We felt from our survey that kraft mills in the southeast were the most logical ones to go to chlorine dioxide first.

Q. The pulp mills in the southeast were?

A. Yes.

[fol. 248] The Court: You nodded your head or I think you nodded affirmatively that the freight rates were cheaper Mississippi to the pulp industry in the southeast than from your Niagara Falls plant.

The Witness: Yes, much cheaper.

Mr. De Lone: Thank you, sir.

By Mr. De Lone:

Q. In addition to these factors the location of a plant in reasonably close proximity to the pulp mill customers put you in a position to give them better service, does it not?

A. No question about that.

Q. Were you endeavoring by locating your plant there to persuade the southern pulp mills to convert to chlorine dioxide generation so they would consume large quantities of sodium chlorate?

A. Originally it was a matter of economics.

[fol. 249] Q. It was a matter of economics?

A. Whether they converted over from their conventional methods of bleaching to chlorine dioxide, that's right.

Q. And insofar as the customer was considering whether to install a chlorine dioxide generating system in his pulp mill in the Southeast, a consideration of course was the cost of the sodium chlorate to the customers?

A. That is correct.

Q. And with a plant in the Southeast and the lower freight costs, this gave the customer, at least in his decision, some assurance about this supply and the cost of this supply of sodium chlorate, is that correct?

A. That is correct.

Q. Now, there has been some reference to your shipments to the West Coast, west of the Rocky Mountains. Am I correct in understanding that so far as shipments in bulk to California are concerned you ship to only one customer there?

A. In bulk, that is correct.

Q. You don't ship any packaged to California, do you?

A. Not to California.

Q. Sir?

[fol. 250] A. No, that's correct.

Q. So that we are clear on what we mean by bulk, bulk means in tank cars or in hopper cars, is that correct, Mr. Berggren?

A. That is correct.

Q. And the way in which sodium chlorate is packaged for sale to various trades is in drums?

A. Non-returnable steel drums, that's correct.

Q. Now, this one customer in California, is that a pulp mill?

A. No, it is not.

Q. For what purpose do they use the produce? And if there is no mystery about the customer, I simply don't want to breach——

A. It is used as a herbicide, both agricultural and railroad.

Q. Would you prefer not to mention the name of the customer because I will not ask you if you would prefer not to?

A. It would be perfectly all right.

Q. You say it is perfectly all right?

A. It is all right.

Q. That company then, as I understand it, is U.S. Borax?

[fol. 251] A. That is correct.

Q. And they use the product as a herbicide and in the agricultural chemical field?

A. That is right.

Q. And this is what you described earlier as a somewhat seasonal demand, is it, the demand that they have?

A. That's right. I am not too familiar about their seasons out there. It varies from the Mid-West. But normally it is. It may be a different season from what we have in the Mid-west—in other words, it may be later.

Q. Well, now, from what you said earlier I gather that a pulp mill is concerned about service in terms of the ability to make prompt delivery after an order is placed, is that correct?

A. That is correct, yes.

Q. And this is an important service consideration to you and was in locating in Columbus, Mississippi?

A. That is correct.

Q. Now, do I understand that with reference to the Borax Company this is not much a consideration, they are able to wait for their shipments because you can schedule tied in to their seasonal demand basis?

[fol. 252] A. Well, they formulate a product and apparently they do store their finished product, or maybe they store their unfinished product, too.

Q. So that in this instance of this one customer the service feature in terms of being able to make prompt delivery from the plant is not a significant item, is that correct?

A. We have had no complaints. We have shipped promptly. Of course the distance is considerable.

Q. And in light of the seasonal nature of some part of the sales is it of advantage to you to keep your freight cars busy? You own a number of freight cars, I assume?

A. Tank cars, yes.

Q. Tank cars?

A. Yes, we do.

Q. And if they are not moving elsewhere it is desirable to have them make a trip and get the allowance from the railroad for making the trip rather than be idle, is that correct?

A. Correct.

Q. I understand, taking the year 1960, that the only sales you made west of the Rockies were to this one customer in California, U.S. Borax?

[fol. 253] A. That would be outside of the uranium area there, we did move stuff in west of the Rockies; it reached Salt Lake City, if you want to talk about that. That would be considered west of the Rockies.

Q. Well, of course, to the extent we are talking about Colorado you have both sides of the Rockies?

A. Yes. If you restrict it to California, one account.

Q. You have also made some shipments to Montana. Is that to the same customer?

A. That is correct.

Q. In 1960 some two hundred tons?

A. That is correct.

Q. You have made no other bulk shipments west of Texas, have you, besides those shipments to Borax in California and shipments to Borax in Montana?

A. You are talking about 1960 and '61?

Q. Yes.

A. No, we have not.

Q. And in Texas you shipped a little over a thousand tons in 1960, half of it roughly to Borax at Fort Worth?

A. That is correct.

Q. And half of it roughtly to a pulp mill located in the [fol. 254] Eastern part of Texas?

A. That is correct, yes, sir?

Q. Is Fort Worth also in the eastern part, or are you not able to define Texas because it is so big?

A. Well, I will put it on the eastern part. I don't want to be criticized for it.

Q. Now, the sales to the uranium industry which you commented on earlier, they are all made in packages, not in bulk, in drums not in bulk, is that right?

A. In large drums, that's right.

Q. You made no mention in the course of your testimony of the use of sodium chlorate to make ammonium perchlorate. Is that not another use of the product?

A. That is correct.

Q. Was that an oversight? I simply wanted to call it to your attention.

A. It wasn't asked.

Mr. De Lone: I have no further questions.

By Mr. Connelly:

Q. I have just one or two questions.

You mentioned on direct examination the sale of sodium chlorate to Olin Mathieson in connection with deliveries from your Niagara Falls plant?

A. That is correct.

[fol. 255] Q. To what plant of Olin Mathieson were those shipments made?

A. It was made to their plant in Niagara Falls—the fact is, just down the street from us.

Q. It was practically——

A. Next door.

Q. —next door to your Niagara Falls plant?

A. Correct.

Q. And you know, do you not, that Olin purchased that sodium chlorate for its use in connection with the manufacture of sodium chlorite?

A. Yes, I am familiar with that.

Q. Is it correct to state that at least at one time sodium chlorite was in a sense a competitive product so far as the bleaching of paper pulp is concerned?

A. Yes, in a minor way, in the early stages it was used in competition.

Q. And are you familiar with the general market for sodium chlorite today, as to whether it is declining or increasing?

A. I am familiar in a broad way with some of the markets, yes.

Q. And you know that the market is decreasing for sodium chlorite, do you not?

[fol. 256] A. I wasn't positive of that.

Q. In any case, you are aware of the fact that the purchases made by Olin of sodium chlorate for use in the production of sodium chlorite will depend, will they not, upon the volume of sodium chlorite being sold?

A. That is correct.

Q. Following the establishment of your Mississippi plant was any change made in the productive capacity of the Niagara Falls plant?

A. Well, the capacity at Niagara Falls is less now than it was at the time the Columbus plant went into operation.

Q. What has happened to bring that about?

A. Actually it is due to the fact that our costs being higher at Niagara Falls, we can ship in closer to Niagara Falls and we don't need that production up there.

Q. In other words, you have been consciously reducing the capacity of the Niagara Falls plant with the thought that that can be more economically handled from your Mississippi plant?

A. Yes. We do, of course, ship to points where it would be cheaper to ship from Columbus, but we have to consider the transportation, the distances, and that is one reason why we are making as much as we are up there.

[fol. 257] Q. And is it generally speaking true that you are reducing your capacity at the Niagara Falls plant with the thought that that will be taken care of by your capacity and production in your Mississippi plant?

A. Well, we won't reduce it entirely, or we won't reduce it any more than we have to now.

Q. I am asking solely about the reduction that has taken place?

A. It has come from Mississippi, that is right.

Q. It is to be provided for by the Missippi production?

A. That is right.

Mr. Connelly: That is all I have.

Mr. Potter: I have no questions on behalf of Penn-Olin.

The Court: Any redirect examination?

Mr. Freed: The Government has no questions, your Honor.

The Court: The witness is excused by both sides, I take it.

* * * * * * * *

[fol. 258] ALVIN J. DIRKSEN, called as a witness by the Plaintiff, being first duly sworn, testified as follows:

Direct examination.

By Mr. Copley:

Q. Mr. Dirksen, by whom are you employed?

A. American Potash and Chemical Corporation.

Q. And what is your position with AmPot, as we will call it in this case?

A. Eastern General Sales Manager.

Q. What chemical products of AmPot come within your responsibility?

A. Our entire line of industrial and specialty chemicals.

Q. Including sodium chlorate?

A. Yes, sir.

Q. How long have you held this position?

A. Approximately five years.

[fol. 259] Q. And prior to that what was your position with AmPot?

A. Manager of our Market Development Department.

Q. Was this your first position with AmPot or were there others farther back?

A. I was hired as Eastern Representative in the Market Development Department. Approximately six months after being hired I was named to this position as Manager of the Market Development Department.

Q. Does your experience with sodium chlorate extend beyond your employment with AmPot?

A. Very superficially.

Q. In what respect?

A. In an approximate two-year association with Oldbury Electrochemical Company in its research activity.

Q. What period of time are we talking about?

A. That is from about June, 1941, to September, 1943.

Q. From 1943 to the time you came with AmPot could you briefly trace your employment history?

A. I spent approximately one year with the Manhattan District of the Metallurgical Lab, University of Chicago, and then subsequent to that about nine years with Phillips

Petroleum and Phillips Chemical Company before joining [fol. 260] American Potash.

Q. When did you first have a responsibility for marketing chemicals?

A. I would say beginning approximately late 1943—forgive me, in 1944, when I joined Phillips Petroleum Company.

Q. Turning now to American Potash's sodium chlorate activities, could you tell us how American Potash first entered the sodium chlorate business?

A. The company entered the business through acquisition of Western Electrochemical Company.

Q. What period of time are we talking about?

A. If my memory serves me correctly, we are talking about six years this January 1—in other words, about January, 1955.

Q. And this was Western Electrochemical's plant at Henderson?

A. Henderson, Nevada.

[fol. 261] Q. At the time you acquired the Henderson, Nevada, plant who was selling its output?

A. The Solvay Process Division of Allied Chemical & Dye Corporation.

Q. And today who is selling its output?

A. The combined effort of our own marketing group and Solvay Process.

Q. Approximately how much of the output does AmPot itself market?

A. Would you elaborate on the question, please?

Q. You stated that initially Solvay was selling the output from Henderson. Now you say it is the combined efforts of AmPot and Solvay. I would like you to put a comparative basis to that if you could. How much of the output of the Henderson plant approximately is AmPot selling today?

A. I am not able to equate this in terms of percentage of effort on their part or our part. It is a joint marketing effort involving both the direct sales function and the technical service function.

By the Court:

Q. I am not sure whether you understand the question as I think it was intended to be understood. As I got it, part of your product is sold or marketed by AmPot exclusively through its own sales organization and part of the [fol. 262] production is being marketed through the joint effort of Solvay and AmPot.

The Court: What you would like to compare, as I understand, Mr. Copely, is the percentage which is marketed by the AmPot organization as against the percentage which is marketed by the joint effort.

Maybe you did understand it that way. I thought you were limiting your consideration to the joint effort and trying to equate it within the periphery of the joint effort. That is not what is intended. It is the AmPot organization versus joint effort.

Mr. Copley: My question is more directed to AmPot versus Solvay or AmPot alone making sales versus Solvay making sales on behalf of AmPot.

The Court: All right. Forget what I have said.

The Witness: Let me attempt to clarify myself if I have confused you. We have a contractual arrangement with Solvay Process which appoints them as an exclusive distributor in the sale of sodium chlorate, and for any sales that are accomplished they are entitled to the contractually arranged commission; so that it is for this reason that I am unable to differentiate between the effort that we put in and the effort that Solvay contributes to his selling program.

[fol. 263] By Mr. Copley:

Q. Can you trace or is it possible to trace the sales to determine who made the sale, whether it was Solvay or AmPot, regardless of who gets the commission?

A. It is very difficult.

By the Court:

Q. I think I am a little confused. I should suppose that someone in your organization would know what your total sales were during any given period of time?

A. I know what our total sales are.

Q. And that someone in your organization would be able to say that Solvay is paid a commission on a certain percentage of that total?

A. They are paid a commission on all sales that are made, your Honor.

Q. Whether made by your——

A. Whether made by my efforts or by Solvay's efforts.

Q. And you have no record—I am not asking you about your own memory, but within your organization you have no record which would show what was made by your efforts and what was made by Solvay's efforts?

A. We have no way of assigning a quantitative designation to the part that we play or they play in accomplishing a sale or total sales.

[fol. 264] Q. You both have contacts with a given customer?

A. Right.

Q. And sometimes it is as a result of the effort of one and sometimes as the result of the effort of the other and sometimes as a result of your joint efforts?

A. That is right.

By Mr. Copley:

Q. When did AmPot construct its plant at Aberdeen, Mississippi?

A. I believe it was brought on stream in about the third quarter of 1958.

Q. At the time that the sodium chlorate plant at Aberdeen was installed and brought on stream did AmPot have any other plants at Aberdeen?

A. No, we had no other operation.

Q. What were the factors which led you to choose Aberdeen?

A. A growing market for the product, relatively low cost power, and very high freight cost for shipments from Henderson, Nevada.

Q. What was the initial capacity of the Aberdeen plant?

A. I believe I recall that the plant was rated at about 12,000 tons a year of capacity.

Q. And its capacity today?

[fol. 265] A. Is about 22,500 tons.

Q. When did these increases take place?

A. The major increase was brought on in about December, 1959. I believe in the interim, from the start up to that point, there were certain slight plant modifications that enabled us to produce something approaching 15,000 tons. The significant expansion came on in December, 1959, about 7,500 tons rated capacity.

Q. I believe you stated the initial capacity was 12,000 tons?

A. That was the rated design on it.

Q. How much of the capacity did AmPot initially sell? How much of that 12,000 tons did it sell?

A. All of it.

Q. How much of the capacity of 22,500 tons at today's capacity, how much of that capacity does it sell?

A. In effect, all of it.

Q. Would you describe the areas in which the chlorate from Aberdeen is marketed?

A. It is marketed primarily in the southern part of the country, which we regard as a line south of the Ohio River and coming east, including Virginia, primarily south of the Carolinas. A nominal amount of the production is sold in New England and some limited tonnage in the midwest and a small amount in the southwest—west Texas.

[fol. 266] You do not include Texas in your definition of the southern part?

A. Yes, I do include that. Yes.

Mr. Copley: With the Court's permission I would like to show Mr. Dirksen a map of the United States and ask him to name the States which he considered in the southern area.

The Witness: Would you repeat the question?

(The last question was read by the Reporter.)

The Witness: From our corporate marketing philosophy we would regard the following States in the southern marketing area: Texas, Oklahoma, Arkansas, Louisiana, Tennessee, Mississippi, Alabama, Georgia, Florida, North and South Carolina, and part of Virginia.

By the Court:

Q. Your marketing philosophy with reference to sodium chlorate?

A. To all of our products.

The Court: All of your products.

We will take a recess until tomorrow morning. What did we agree on, 10:30, as the commencement hour, or 10:00?

Mr. Freed: We fixed 10:00.

The Court: I believe we will adjourn at 4:00.

[fol. 267] (At this point the trial was adjourned until 10:00 o'clock a.m., Tuesday, November 7, 1961.)

[fol. 268] Tuesday, November 7, 1961, 10 o'clock a. m.

PRESENT:

As before noted.

Mr. Copley: Your Honor, before commencing my questioning Mr. Dirksen would like to change a date in his testimony of yesterday regarding the expansion of the Aberdeen plant.

ALVIN J. DIRKSEN (Resumed)

Direct examination (Cont.)

The Witness: I believe I said December, 1959; it should have been about December, 1960.

By Mr. Copley:

Q. Yesterday, Mr. Dirksen, in testifying about selling the output of the Henderson plant you used the term "direct sales function" and "technical service function".

What did you mean by the term "direct sales function"?

A. Excuse me. I think you just said the output of the Henderson plant?

Q. Yes. What do you mean by these terms without regard to the output of any particular plant?

[fol. 269] A. All right. By the "direct sales function", I am referring to the procedure of soliciting business, handling shipments, invoicing, any customer complaints about shipments.

By "technical service" I am referring to the function where an engineer or a chemist renders assistance in the start start-up of a plant or in seeing that the product is properly and efficiently used in process.

In the direct selling area I was attempting to explain that our company plays a very significant role in this part of the function of the selling process.

I also wish to make clear that Solvay renders almost the entire function of the technical service phase. They also assist materially in the direct selling.

Q. Yesterday you defined for the Court the southern area as AmPot uses that term. How many sales offices does AmPot have in the southern area?

A. We have two district offices, one in Shreveport, Louisiana, and the other in Atlanta, Georgia. We have appointed a man to serve as a regional sales manager in this southern area. His responsibilities embrace Shreveport and Atlanta districts.

Q. How many personnel man these offices?

A. Two men in Shreveport, and a total of three men in Atlanta.

[fol. 270] Q. Is that in addition to the regional manager?

A. Including the regional manager.

Q. At Atlanta?

A. At Atlanta.

Q. What products are sold by these offices in the southern area?

A. They are selling sodium chlorate, sodium sulphate, our boron product line, and all of our various chemicals.

Q. Is salt cake one of those products?

A. Yes, Sodium sulphate is also salt cake, or it is synonymous.

The Court: What is that?

Mr. Copley: Salt cake.

By Mr. Copley:

Q. At the time that you installed your Aberdeen plant in 1958, how many sales offices did you have in the southern area?

A. We had at that time both of these district offices established.

Q. Were the personnel manning these offices the same?

A. We have added one man in each office since then.

Q. When the Aberdeen plant went on stream in 1958, who was selling the output of that plant?

A. I would say that at that time Solvay Process Divi- [fol. 271] sion was almost entirely responsible for selling it.

Q. Today where does that responsibility rest?

A. I would say again that the direct selling aspects of it are largely our responsibility.

Q. Approximately what portion of the output of the Aberdeen plant is sold by the AmPot sales force?

A. If the Court can understand, I have attempted to ascribe about 70 per cent or so of the direct sales function or responsibility to our company. I want to make it clear that Solvay also is actively selling. This is why I am hesitant to try to fix any quantitative responsibilities, but I feel that we contribute say about 70 per cent of the direct selling effort.

By the Court:

Q. That was the question you could not answer yesterday?

A. That is right, your Honor.

Q. Upon reflection this is the best approximation or breakdown you could make?

A. Yes.

Mr. Copley: Yesterday, your Honor, the question was asked specifically with reference to the Henderson plant. Today we have been speaking more of Aberdeen.

[fol. 272] By the Court:

Q. Are you referring to sodium chlorate exclusively in your last testimony?

A. Actually these remarks are primarily centered around Aberdeen. Is that your understanding?

Mr. Copley: Yes, that is my understanding.

By the Court:

Q. And limited to sodium chlorate?

A. Yes.

By Mr. Copley:

Q. Before Aberdeen went on stream, where was the output of your Henderson plant sold?

A. Both east and west.

Q. Any particular area in the east?

A. Well, heavily in this Southern area, or particularly the Southeastern part of the country.

Q. What time period did you have in mind here?

A. For these remarks?

Q. Yes, sir.

A. Previous to the Aberdeen start-up; so it would be previous to about mid-'58.

Q. Could you tell us approximately what portion of the output of the Henderson plant in 1957 was sold in the East?

The Court: Henderson was producing solely sodium [fol. 273] chlorate?

Mr. Copley: I am referring only to the sodium chlorate output of the Henderson plant, your Honor.

A. And you realize that part of the output goes to alternate uses besides sale as such.

By Mr. Copley:

Q. I understand that.

A. So you are referring to the sales of sodium chlorate out of the Henderson plant?

Q. To the East.

A. We were selling about 3500 tons in the West and about 10,000 in the East.

Q. Do you know approximately how much of that 10,000 was in the Southeast?

A. I would estimate about 7500 in the Southeast.

Q. Turning to the technical service function which Solvay performs for your company, could you give us an outline of what services Solvay does render to the pulp and paper industry in the East, or perhaps I should not confine it to the East and just say, what services does Solvay itself render?

The Court: With reference still to——

Mr. Copley: Sodium chlorate.

The Court: Sodium chlorate.

[fol. 274] A. Solvay Process has a very effective and large over-all technical service laboratory in Syracuse, New York, and one of the sections in it is dedicated to pulp and paper industry tech service, and, as I recall, their staff is headed up by a very experienced and responsible paper chemist, and he has about eight employees in the group, and one or two of this group, in addition to the director, are especially versed in pulp and paper chemistry and technology. These people assist in the plant start-ups, bleaching plant start-ups, and in turn offer technical advice as questions arise from the paper production people.

Q. Do you know how often they are called upon to render services in connection with the start-up of a new mill?

A. I believe that they normally volunteer their services on a start-up, or, if not, they are very frequently called upon to offer certain engineering and technical assistance. So that practically on every start-up they very likely are on hand for several days or a week or two.

Q. Do you know how many chlorine dioxide mills were installed in 1960 in which Solvay rendered technical assistance?

A. I can think of about three, two or three.

Q. Turning to the operating side of the chlorine dioxide process mill rather than the start-up, how often is Sol-[fol. 275] vay called upon to assist in the operating problems?

A. It is very difficult to answer with any accuracy. It might be——

The Court: Well, don't guess about it.
The Witness: Don't guess, all right.

By Mr. Copley:

Q. In AmPot's opinion what is the value of technical services today as a sales aid in pulp and paper industry?

Mr. De Lone. Your Honor, I assume he is interested in Mr. Dirksen's opinion. If he has an opinion, I have no objection.

The Court: I understand the corporate opinion is called for.

Mr. De Lone: Well, I object to that. The corporation hasn't been qualified. I suppose this witness is qualified.

The Court: Well, is it important to draw the distinction between the witness' opinion and AmPot's opinion as such, Mr. Copley?

Mr. Copley: Your Honor, I think the two coincide.

The Court: Well, ask him for his own opinion.

By Mr. Copley:

Q. Mr. Dirksen, what is your opinion regarding the value of technical services in selling sodium chlorate to [fol. 276] pulp and paper industry?

A. It is a fairly important part of the over-all selling procedure.

Q. Is it as important today as it was, say, three years ago?

A. You are referring only to sodium chlorate?

Q. Yes, sir.

A. And its application?

Q. Yes.

A. In my opinion not quite as important today.

Mr. Copley: Your Honor, that concludes the Government's direct examination of Mr. Dirksen.

Cross-examination

By Mr. De Lone:

Q. Mr. Dirksen, you have just been describing the technical service function performed by the Solvay Division of Allied Chemical. I understand you to have testified, though, that they also have a sales force which calls on pulp and paper mills in the Southeast, Solvay does, isn't that correct?

A. I don't recall so testifying.

Q. You described to some extent at least the fact that the Solvay Corporation does have a sales organization [fol. 277] which is active in, I think you said, the Southeast and various other places?

A. I beg your pardon. I understand you.

Q. Now, that sales force, so far as the Southeast is concerned to your knowledge, if you know, approximately how many people are in this area? I guess you defined it as the South yesterday. You called off a list of states. How many sales personnel does Allied have in that area today?

The Court: Are you limiting this to any given product or are you taking——

Mr. De Lone: I am asking first, sir, about their force and, to the extent the witness can tell me, how it is limited by product.

A. In outline Solvay has an Assistant Director of Sales in New York who is primarily concerned with pulp and paper chemicals, and he in turn has rather heavy responsibility over certain district offices, such as Charlotte——

By Mr. De Lone:

Q. Charlotte, North Carolina?

A. North Carolina. They have a small office, as I recall, in Jacksonville, Florida; and in other offices they have one or more salesmen who are particularly involved in selling pulp and paper chemicals.

Q. They have other offices in addition to Charlotte?

[fol. 278] A. For example, Boston gives us some assistance in several of the New England mills, and we would get some assistance from their Cincinnati office, again as a part of their over-all selling activity.

Q. Well, now, so far as the director who is in charge of their efforts in the pulp and paper industry, what products are involved in Allied's pulp and paper industry efforts?

A. I would say items such as chlorine, caustic soda, and perhaps to some extent hydrogen peroxide. These are somewhat allied chemicals to sodium chlorate in the pulp and paper industry.

Q. Do you include sodium chlorate in the list, that is, with which this man in New York and the offices under him are concerned?

A. We hope so and so encourage these men.

Q. And so far as the Southeast area is concerned and any Allied or Solvay sales effort in the Southeast, that would come chiefly from the offices of Solvay at Charlotte, North Carolina, and Jacksonville, Florida, is that correct?

A. And some assistance from all of their offices that are serving pulp and paper mills, these part-time services.

Q. Do I correctly understand that these sales per-
[fol. 279] sonnel of Solvay are concerned not just with one chemical, but with a group of pulp and paper chemicals to which you have made reference—chlorine, caustic soda, sodium chlorate, and hydrogen peroxide?

A. Yes.

Q. So to that extent, at least, they don't have any men that specialize just in sodium chlorate?

A. That is right.

Q. But the customers they call on in the pulp and paper field are customers for all of these products?

A. That is my understanding.

Q. I also understand that going back to 1958, when the Aberdeen plant came on stream you testified that at that time its output was handled almost entirely by the Solvay Division of Allied, if I understand your testimony correctly?

A. Yes.

Q. Then I take it there has been a shift and AmPot has moved more into direct contract with the customer and the picking up of orders than had been the case a few years back?

A. That is right.

Q. This would apply, would it not, whether the product being sold moved into the area we have generally described

as the southeast from Henderson or from Aberdeen? Did it make any difference back in 1958 where the tonnage [fol. 280] originated who was going to handle the selling?

A. I don't think that was significant.

Q. Then to the extent that by the time the Aberdeen plant had come on stream by the end of 1958, to the extent that AmPot was selling to pulp mills in the southeast, would it be fair to say that the entree to those pulp mills as a sales outlet was gained for AmPot by Allied or Solvay, which ever you want to call it?

A. Yes.

Q. And subsequent to that time AmPot has gotten itself closer to the customer, so you have direct contacts with them and are not so dependent on Allied to preserve those relationships?

A. That is right.

Q. Now we might turn to the time when you decided to go forward with a plant at Aberdeen, Mississippi, which came on stream sometime in 1958. At the time you were considering this subject had Hooker already located its plant at Columbus?

A. Yes.

Q. Was that an effect which you took into account in deciding what you were going to do at AmPot?

A. Yes.

Q. Why, if you had a facility at Henderson, Nevada, did you decide to build a plant at Abereen, Mississippi?

[fol. 281] A. We needed to expand.

Q. Were there any other reasons?

A. We felt that being closer to the market would offer some material advantage in effecting sales.

Q. Would you explain what advantage you saw in effecting sales from having a plant at Aberdeen, Mississippi, as against one at Henderson?

A. There is some resistance on the part of buyers to purchase from distant plants. There is always the possibility of delays in receipt of material the farther the plant is from the source, so that there is a logical preference to buy closer to home in the chemical industry.

Q. Had you prior to the construction of your Aberdeen plant encountered such resistance to purchases from your

Henderson facility or customer preference for a plant nearer their location?

A. Not unduly, because we were in a fairly happy supply and demand balance at the time, so that we were getting about the tonnage that we were trying for even from Henderson.

Q. This was, then, I take it, more an anticipation of future demand than the immediate situation that you were thinking of when you went forward with the Aberdeen facility initially?

[fol. 282] A. That is right.

Q. In addition to the customer reaction consideration which you mentioned, was there consideration from your standpoint of the freight costs involved?

A. Oh, yes.

Q. Thinking in terms of serving the whole southeastern area of the United States, the pulp mills there, from Henderson as against serving them from Aberdeen, Mississippi, or a location generally in the southeast, what was the freight disadvantage approximately on the average that you were confronted with?

A. Approximately $25 to $30 per ton in the southeastern consuming area.

Q. And that is against a price per ton delivered in the southeast of what, approximately? Would you just do the mathematics? We have talked about price on a hundredweight basis. What was the selling price, the price you were getting at that time when you made deliveries into the southeast?

A. We were getting $8.15 per ton f.o.b. Henderson, and then having to absorbe $25 to $30 a ton freight. Does that answer your question?

Q. Yes. Well, you have given it in pounds. Just do the mathematics for me. I am sure you know what that [fol. 283] means your f.o.b. Henderson price is per ton.

A. I believe that calculates to $163 a ton.

Q. Then you would have to absorb the freight from Henderson to Columbus; is that right; which was the location of the Hooker plant? You would equalize or pick up yourself the freight to the northwest producing point, namely, Hooker's plant at Columbus?

A. That is right.

Q. And then the customer would pay the balance of the freight?

A. That is right.

Q. I meant to ask you earlier and forgot: This arrangement that you have with Solvay you testified about provides that they get a 5 per cent commission on all sales. Is that on all sales to the pulp and textile industry or is it on all sales that AmPot makes?

A. They are only exclusive in pulp and paper and textiles. They do no other selling for us.

The Court: Is there testimony that the commission is 5 per cent?

Mr. De Lone: I thought the rate was mentioned yesterday.

The Witness: I believe I mentioned that yesterday. That is in the contract.

[fol. 284] There is a correction to that, an addendum. The stipulated commission is 7½ per cent west of the Rockies and 5 per cent east of the Rockies. That is a part of the contract.

By Mr. De Lone:

Q. Do you know the reason for that distinction?

A. I believe the reason was——

Q. If you don't know, Mr. Dirksen, I don't want to encourage you to guess about things.

A. Well, I am fairly sure of this. I think the reason was the fact that the greater distance west increased traveling costs, and the limited number of pulp and paper accounts there. It seemed fair and equitable to pay a bit more there.

Q. Returning, then, to the subject of the decision to go forward with this Aberdeen plant, you commented on the service problem and delivery problem. About what is the time for delivery from Henderson to the southeast area generally? Let us take a point say in Alabama.

A. 10 to 14 days, roughly.

Q. What is it when your shipment moves from Aberdeen, approximately?

A. Two to four.

Q. Does AmPot own its own tank cars or hopper cars?

A. They are on a long-term lease.

[fol. 285] Q. Is the cost to you and the tying-up of your equipment also increased or minimized if your plant is at Aberdeen rather than Henderson?

A. Do you need less equipment? Is that your question?

Q. Yes, or are your equipment costs less if your delivery is from Aberdeen?

A. I would think so, yes.

Q. At the Aberdeen plant of AmPot do you have any facilities for drumming the product?

A. No.

Q. All sales from Aberdeen are made in bulk; is that correct?

A. That is right, yes.

Q. Such business as you have in drums I take it then all originates from Henderson?

A. That is right.

Q. In 1960, according to figures which have been supplied by your company and which will be in evidence AmPot shipped approximately a little over 7000 tons of sodium chlorate from Henderson into the area of Texas, Oklahoma, Arkansas, Louisiana, Mississippi, Alabama, Georgia, South Carolina, Florida, North Carolina, Virginia, West Virginia, and Kentucky, which some of us at least have been referring to as the southeast. I understand your plant at Aberdeen had not gone on stream [fol. 286] with this additional tonnage of 7500 tons until December of 1960?

A. That is right.

Q. Was it your plan and indeed are you practicing it in 1961, to fill as many of those orders in that territory out of Aberdeen rather than out of Henderson, as many as you can?

A. We keep Aberdeen sold up as much as we can.

Q. And your sales out of Aberdeen you make as close to the Aberdeen plant as you can; is that right?

A. That is right.

Q. You made mention a little while ago of the current price or at least of the price at which sodium chlorate is sold. It was indicated yesterday that that price has been stable in the last few years and was somewhat higher back in 1954. Have the costs of making sodium chlorate gone down since 1954?

A. I would not know, sir.

Q. Did you learn of the formation of Penn-Olin at the time it was publicly announced in February of 1960?

A. Would you repeat the question?

Q. Did you learn that Penn-Olin, a joint venture of Olin Mathieson and Pennsalt, was planning to go into the sodium chlorate business at Calvert City in February of 1960?

[fol. 287] A. We learned fairly early that year. I am not sure exactly when.

Q. Despite that knowledge did you proceed with the construction of an increase in your facilities at Aberdeen from 15,000 tons to 22,500 tons of rated capacity?

A. Without hesitation.

Q. You heard mentioned yesterday—I think you were in Court when Mr. Berggren testified—of Hooker's efforts to sign up five-year contracts. Did AmPot make similar efforts following the announcement of Penn-Olin?

A. Yes.

Q. In the sales which AmPot makes into the southeastern area that I have described, specifically to pulp and paper mills, do you sell exclusively to mills which have a Solvay Process chlorine dioxide generating system, or do you sell both to those mills and to mills with a Mathieson process chlorine dioxide generating system?

A. Both.

Q. And in terms of the total number of mills to which you sell do you know which predominate? Do you sell more to mills with the Solvay process or more to mills with the Mathieson process?

A. Somewhat more to Solvay installations.

Mr. De Lone: I have no further questions, sir.

[fol. 288] By Mr. Connelly:

Q. Mr. Dirksen, you testified to the fact that your Henderson plant was at a freight disadvantage as against the Columbus plant of Hooker in sales to the sodium chlorate market in the southeast. Was there also a sodium chlorate market in the northeast?

A. Some market.

Q. Were you or was your Henderson plant at a freight disadvantage in that market as against the Niagara Falls plant of Hooker?

A. Yes.

Q. Was there also a sodium chlorate market in the northwest?

A. Yes.

Q. Was the Henderson plant of your company also at a freight disadvantage as against the Oregon plant of Pennsalt?

A. Yes.

Q. Incidentally, you testified I think on direct examination concerning sales made from the Henderson plant to the west. You have not, I take it, made sales to the northwestern market for sodium chlorate, have you?

A. In the past.

Q. In 1960 did you make any sales or shipments to that northwest market?

[fol. 289] A. Not that I recall. In pulp and paper?

Q. Yes.

A. That is right.

Q. Having in mind these several freight disadvantages to which you have testified, can you tell us, if you know, why the Henderson plant was located at Henderson, Nevada?

A. It would only be conjecture. It was before my time.

Q. You do know, do you not, that that was originally constructed as a defense facility rather than a commercial plant?

A. I do.

Q. Does your company own that plant or does it lease it?

A. It is my understanding that we own the part that we are operating, with one exception. I believe there is a Navy facility that we are operating, but we do not own it.

Q. You operate that lease from the United States Navy?

A. I believe that is the status.

Q. In connection with your current efforts to sell sodium chlorate do you encounter vigorous competition?

A. It is pretty vigorous.

Q. Has there been any lessening in that competition [fol. 290] to your knowledge since the establishment of Penn-Olin in 1960?

Mr. Copley: Your Honor, I object. That question calls for a legal conclusion.

Mr. Connelly: No. I am simply inquiring about the witness' experience encountering competition in selling sodium chlorate.

The Court: The objection is overruled.

The Witness: Could I have the question repeated?

Mr. Connelly: Would you read the question, please?

(The Reporter read the question as follows:)

"Question: Has there been any lessening in that competition to your knowledge since the establishment of Penn-Olin in 1960?"

A. No.

By Mr. Connelly:

Q. Do you know of any facts which are likely to lead to a lessening of competition in the sodium chlorate business in the future?

A. No.

Mr. Connelly: That is all.

Mr. De Lone: Your Honor, I omitted two brief questions I had intended to ask the witness. Perhaps the Government has some more examination.

[fol. 291] The Court: I think that the cross-examination should be concluded before the redirect commences. Do you have any objection to supplemental questions being asked by Mr. De Lone, Mr. Copley?

Mr. Copley: No, your Honor, we have no objection to supplemental questions.

By Mr. De Lone:

Q. Mr. Dirksen, in your earlier examination you made some reference to the fact that not all of the output of the Henderson plant goes into commercial sales, that is, the sodium chlorate output. To what other use besides commercial sales of the product does American Potash put sodium chlorate made at its Henderson facility?

A. It is an intermediate to sodium perchlorate, potassium perchlorate, potassium chlorate, and ammonium perchlorate.

Q. And do you make al lof those products at Henderson

and therefore in captive use consume some of the capacity of your Henderson plant for those other products?

A. Yes.

Q. And is ammonium perchlorate the largest of those other products in terms of the current rate of production?

A. Yes.

Q. And do you anticipate further increases in the ammonium perchlorate demand?

[fols. 292-294] A. Yes.

Q. Could you tell us also when Columbus, Mississippi, became the equalization point for shipments from Henderson, Nevada, to the southeast?

A. When?

Q. Yes. You described the process but I didn't tie you down to when it occurred. Did that happen when Hooker began to ship from its Columbus, Mississippi plant?

A. Yes.

Q. Up to that time you would have had to equalize from Henderson into the southeast to equalize with Niagara Falls rather than with Columbus, isn't that right?

A. I again assume so. Again this period was before my experience.

Mr. De Lone: I have no further questions.

Mr. Copley: No further questions, your Honor.

The Court: That is all.

. . . . . .

[fols. 295-296] Wednesday, November 15, 1961, 10 o'clock a.m.

. . . . . .

[fol. 297] STANLEY OSBORNE, a witness called by the defendant Olin-Mathieson Chemical Corporation, being first duly sworn, testified as follows:

Direct Examination

By Mr. Connelly:

Q. Mr. Osborne, are you presently employed by the defendant, Olin-Mathieson Chemical Corporation?

A. Yes, sir.

Q. In what capacity?

A. President.

Q. For how long have you held that position?

A. Since May 2, 1957.

Q. How long have you been employed by defendant Olin in any capacity?

A. Since 1950.

Q. Prior to your first employment by Olin what position did you occupy?

[fol. 298] A. I was vice president of Eastern Airlines.

Q. Since your employment by Olin Mathieson, will you state in general terms the nature of the positions that you have held and the experience that you have had with the company?

A. I came in as treasurer of Mathieson Chemical Corporation, a predecessor company. I then became financial vice president upon the merger with Olin. In 1954 I became executive vice president in charge of the international division. In 1956 I added the financial vice presidency to that. In 1957 I became president and chief executive officer.

Q. Apart from your work with the International Division, has your experience with the company been entirely in the administrative and financial end?

A. Yes, sir.

Q. Mr. Osborne, I will call the defendant "Olin" for the purpose of convenience. Does Olin operate through a number of different divisions?

A. Yes, sir.

Q. Will you state what those divisions were during the period 1959-'60?

A. The Chemicals Division, the Organics Division, the Metals Division, the Packaging Division, the Pharmaceutic [fol. 299] Division, as represented by Squibb, the Arms and Ammunition Division, represented by Winchester-Western, and the International Division. Seven in all.

Q. Without going into detail, will you state in a general form the nature of the products produced and/or sold by each of those divisions?

A. The Chemicals Division is generally divided into three major areas: agricultural products, phosphate chemicals, and industrial chemicals, so-called.

The Organics Division is divided into organic chemicals, commercial explosives, and work in research and development for the Government.

The Paper Division, or the Packaging Division, is divided into fine papers, films, and forest products.

The Metals Division operates in the non-ferrous field, aluminum and brass.

Squibb, or the Pharmaceutical Division, operates in the ethical drug field, the over-the-counter drug field, the veterinary field.

The Winchester-Western Division operates in sporting arms and ammunition, military arms and ammunition, and power actuated tools.

I think I have covered all of those.

The International Division represents the company [fol. 300] throughout the world outside of the 50 states and the District of Columbia.

Q. Are there from time to time requests presented by the various divisions of Olin for capital appropriations for new products, new equipment, new facilities, and the like?

A. Yes, sir.

Q. Is that a frequent situation or infrequent?

A. It is a very frequent situation.

Q. What if any procedure has been established by Olin

to deal with the matter of capital appropriation requests submitted by the various divisions of the company?

A. The general procedure is what we call a Whither Report issued once a year by each of the divisions, which gives in a general form the program that they would like to follow for the succeeding five years, not only as to capital expenditures but as to research, people, and everything that has to do with the program of a division.

This Whither Report is merely a program presented to the corporation by the division to the end that the moneys available to the corporation in every year can be divided in a proper way rather than "First come, first served." The Whither Report, however, if accepted by the corporation, does not permit the expenditure of the funds. This has to [fol. 301] be done through capital asset appropriations, which are then referred to a Capital Asset Appropriation Committee, who either approves or disapproves. If the committee approves, then the division and the committee are together and the matter comes to me for final signature, up to a certain amount of money; beyond that, to the board. If the committee and the division disagree, they have a right of appeal to me, where a decision is reached, and if turned down, that is the end of it; if not turned down, then it goes on the successive steps to appropriations.

Q. You spoke in describing that procedure of the acceptance or non acceptance by the corporation of the division's Whither Report. What person or persons are involved in the passing upon such Whither Reports for the corporation?

A. Generally speaking, a division will present a written Whither Report, which it will then send to the group called the staff, so-called experts on the corporate level, who will study it anywhere from a week to a month. They will meet with the division. The division makes an oral presentation. Questions are asked and then the staff either recommends that the Whither Report be accepted as a general program of action of the division or turned down in whole or in part.

[fol. 302] Q. During the period from 1957 to 1960, Mr. Osborne, were there any limitations in effect upon the amount of funds, of corporate funds available for capital appropriations by the divisions?

A. Insofar as limitations upon the ability for any Vice

President and General Manager to appropriate without approval from the corporation, yes, $25,000, which has been raised to $50,000 recently.

Q. With reference to capital appropriations request made by the divisions was there or has there been during any part of that time any restriction or limitation upon the funds, the volume of funds, available for capital appropriations?

Mr. Freed: I object to that question, your Honor. I do not see its relevancy to this case.

The Court: What is the relevance?

Mr. Connelly: The suggestion has been made by the plaintiff that the defendant Olin was proceeding with plans to erect a facility for the production of sodium chlorate. I propose to develop through this witness the procedure involved to indicate that the project had never gotten to the point of corporate action, of corporate decision in favor of any such project, and as one of the aspects of that I simply wanted to bring out the fact that during this period of time there was in fact a period of financial stringency [fol. 303] so that the corporation had to deal competitively with the various requests by the several divisions.

Mr. Freed: Your Honor, the procedure that Mr. Connelly wishes to bring out from this witness certainly is pertinent to action that the corporation took, but I do not believe that financial stringency, or however it may be characterized, is relevant in an anti-trust case unless the defendant is interposing a failing corporation defense, or something equivalent to it.

The Court: The objection is overruled.

By Mr. Connelly:

Q. Do you have the question in mind, Mr. Osborne?

A. During the period 1958 and 1959 particularly the corporation did have a severe financial stringency situation as a result of our having embarked upon the aluminum program which involved a total expenditure of somewhat under a half a billion dollars, and a direct expenditure by the corporation of over $125,000,000, which left the other divisions without funds for expansion, and in 1958 we had stopped all projects other than the ones then in building.

Q. Did there come a time when the practice of authorizing capital appropriations was resumed?

A. Yes. We were able to—Two things happened, one, [fol. 304] we raised $60,000,000 in the financial markets through the issue of 5½% debenture bonds, and our troubles began to get behind us so that we were able to allot funds to the other divisions on an equal basis.

By the Court:

Q. What was the date of issuance of your debentures?

A. As I recall it, sir, it was the latter part of 1957 and the early part of 1958. There were two issues.

Q. That financing program was in contemplation for some period, I suppose, before the debentures were actually marketed?

A. No. They were not over a month, just the length of time necessary to get them through the S.E.C.

By Mr. Connelly:

Q. I show you Plaintiff's Exhibit 175, being the letter of agreement dated February 11, 1960, between Olin and Pennsalt, and ask you whether you executed that agreement on behalf of Olin?

A. Yes.

Q. I show you also, Mr. Osborne, Plaintiff's Exhibit 185, which is a memorandum dated January 22, 1960, from Mr. Block to you, and ask you whether you received that memorandum.

A. Yes.

[fol. 305] Q. who was Mr. Block?

A. Mr. Block at that time was Vice President and General Manager of the Chemicals Division.

Q. Is Mr. Block still alive?

A. No.

Q. When did he die?

A. He died a year ago.

Q. With reference to the memorandum from Mr. Block of January 22, 1960, can you fix for us approximately the time at which you first gave consideration to a proposed joint venture between Pennsalt and Olin?

A. I would think within a very few days of the January 22 letter to me.

Q. Did you have a discussion with anyone on the subject of the proposed joint venture, and if so, with whom?

A. Mr. Block.

Q. Will you state the substance of that discussion, please?

Mr. Freed: I object, your Honor. It is hearsay.

The Court: This is an internal communication you are asking about, Mr. Connelly?

Mr. Connelly: Yes.

The Court: I take it out of the presence of the Government, certainly.

[fol. 306] Mr. Connelly: I think that is true. This is one of the corporate procedures that preceded the entering into the arrangement in question. I take it we are entitled to produce for the benefit of the court the information on the basis of which the parties acted in this situation. It is not being offered for the truth of anything that was said in the course of the conversation, it is offered as evidence——

The Court: To establish the conversations?

Mr. Connelly:—of what happened as a result of which the corporate corporation took action.

The Court: Mr. Freed, I think I will have to hear the testimony really to properly determine whether the subject matter is admissible. I think it will not be possible for me——

I shall overrule your objection without prejudice, however, to your right to move to strike the testimony after it has been introduced, if you see fit to do so.

Mr. Freed: Thank you.

By Mr. Connelly:

Q. Do you have the question in mind, Mr. Osborne?

A. You asked the question at what time did I first—what was my conversation with Mr. Block.

Q. Yes.

A. As best I recall it it was the approach by Mr. Block [fol. 307] whether or not I would be willing to entertain a joint venture with Pennsalt in the chlorate field, and the

letter of January 22 follows my acceptance of the program that he had brought to me for consideration.

Q. Was the program brought to you for your consideration that which was subsequently reflected in the letter of agreement of February 11, 1960, Plaintiff's Exhibit 175?

A. Yes.

Q. That letter of agreement, Mr. Osborne, contains in the first paragraph this statement:

> "This letter is intended to outline a basis on which Pennsalt Chemicals Corporation, Pennsalt, and Olin-Mathieson Chemicals Corporation, will enter into a joint venture for the manufacturing and marketing of sodium chlorate, potassium chlorate, and perchlorates to be manufactured in facilities of a new company designated as Penn-Olin Chemical Company hereinafter referred to as Penn-Olin, to be owned equally by Pennsalt and Olin."

I ask you whether in your discussions prior to February 11, 1960, there had been any discussion on the subject of products other than sodium chlorate, specifically a discussion of the possibility of production of potassium chlorate [fol. 308] and perchlorates?

A. Not that I recall.

Q. Did there subsequently come a time when the matter of potassium chlorate and perchlorates was ever excluded between the parties as an activity of the Penn-Olin Company?

A. The answer to that is yes because as of today there is no consideration of having perchlorates in the Penn-Olin Company.

By the Court:

Q. What about potassium chlorate?

A. The same, sir.

By Mr. Connelly:

Q. I will ask you to look, Mr. Osborne, at Plaintiff's Exhibits 181, 182, and 183, which are three agreements between Olin and Pennsalt with reference to Olin, dated as of January 2, 1961.

I ask you whether you are generally familiar with those agreements?

A. Yes.

Q. Do these agreements constitute the definitive agreements dealing with the Penn-Olin venture which were referred to in the outline of February 11, 1960, agreement?

A. Yes.

Q. So far as you know, Mr. Osborne, is there any under-
[fol. 309] standing or agreement between Olin and Pennsalt on the subject of the Penn-Olin joint venture other than that reflected in the documents which I have just shown you?

A. No.

Q. Prior to February or the early part of 1960, when Mr. Block brought to your attention the proposal with reference to a joint venture with Pennsalt, had there been any consideration given to your knowledge to the subject of a sodium chlorate facility for the Chemicals Division?

A. Yes.

Q. I show you Plaintiff's Exhibit 15, which consists of extracts from the so-called Whither Report of the Industrial Chemicals Division, dated April 4, 1958, and I call your attention specifically to the page which is headed Section 4, five pages from the back of the document, specifically under that the paragraph headed, "Electrochemical Process Products," and the statement therein contained:

"Products Ind Chem"

I take it that refers to the Industrial Chemicals Division?

A. Yes.

Q. "Products Ind Chem should seriously investigate since they meet one or more of the aforementioned criteria,
[fol. 310] including the following: (a) chlorates and perchlorates."

And then there is a discussion of factors affecting possible interest in investigating those products.

Is that the first reference that you are aware of in terms of comments by the Chemicals Division to corporate management on the subject of sodium chlorate?

A. Yes.

Q. Was any action taken by the corporate staff with

reference to that particular subdivision of the Chemicals Division Whither Report, 1958?

A. The only action that I recall is in 1959 when the staff turned down the suggestion of the Chemicals Division for the construction or for the programming, rather than the construction, for the programming of the chlorate plant at McIntosh, Alabama.

Q. So far as the 1958 report, Plaintiff's Exhibit 15, which is before you, is concerned, that reference to which I have directed your attention is merely a statement that products should be seriously investigated by Ind. Chem. Did that call for any corporate action?

A. No, sir. This is just a programming of the Chemicals Division and did not call for any corporate action.

Q. I now show you Exhibit 32, which is the 1959 Whither [fol. 311] Report of the Chemicals Division, and direct your attention to the bottom of the first page of that document, the page being numbered 18:

> "It is recommended that a sodium chlorate facility having an annual capacity of approximately 15,000 tons be installed as an addition to our present McIntosh, Alabama, plant, such facility to be ready for operation in 1961. We are advised that a competitive chemical producer, new to the sodium chlorate field, is giving serious consideration to the installation of a sodium chlorate producing plant, and therefore we further recommend that announcement be made at once for our plans for the new McIntosh chlorate facility."

Is that the report to which you referred just a moment ago?

A. Yes, sir.

Q. The first recommendation by the Chemicals Division?

A. Yes, sir.

Q. I show you also Plaintiff's Exhibit 34, which is an extract from a document dated April 23, 1959 prepared by Mr. E. H. Bellows, and addressed to you, the staff, and Mr. J. O. Logan, on the subject of the Chemicals staff meet- [fol. 312] ing on April 16, 1959, and refer you to the statement contained on page 2 of that memorandum, the paragraph lettered F:

"The program for sodium chlorate at McIntosh is not sufficiently attractive to be approved at this time. There should be further examination on three points, (1) technical adequacy; (2) is the proposed installation basically a protective measure; (3) is a pay-out of more than six years the best that can be obtained?"

I ask you whether that reflects the decision to which you earlier testified by the staff rejecting the recommendation of the Chemicals Division in 1959?

A. Yes, sir.

Q. Following that action, April of 1959, was there at any time subsequent thereto any recommendation by the Chemicals Division of Olin to corporate staff management of a proposal to create an independent sodium chlorate producing facility?

A. I believe there was after this in late 1959, in the Whither Report of 1959.

The Court: Was that after the studies had been made of the three points which are referred to in the April 23, [fol. 313] 1959, memorandum?

The Witness: I would judge so, yes, sir.

By Mr. Connelly:

Q. Do you have Plaintiff's Exhibit 32 before you, the Whither Report of '59?

A. This is the '59 Whither Report.

Q. I call your attention to the cover page of that, which refers to Revised Exhibits 26, 29 and 30, dated October, 1959. Are those exhibits what you referred to by further action with reference to this proposal?

A. Yes, sir.

Q. Was there any subsequent recommendation made other than the one which was contained in the April, 1959, Whither Report? Was there any subsequent recommendation made by your Chemicals Division of a proposal to proceed independently with the construction of a sodium chlorate plant?

A. No, sir, not as far as the Chemicals Division making a definitive recommendation that required corporate action or funds.

Q. In connection with Olin's consideration of proposals

made by its divisions, is there any corporate policy relating to the question whether a proposed new product should be dealt with as an independent activity or as a [fol. 314] joint venture with some other company?

A. There is no policy as such. All of the various factors are considered, but the various factors have to be considered before you can establish which is the best way or would be the most profitable in which to enter a particular new field.

Q. Will you state, please, the reasons that led you in February of 1960 to authorize the preliminary agreement with Pennsalt looking toward the creation of a joint venture?

A. I would say there are three. The first is the matter of process. Pennsalt had a process; Olin did not, and in a product such as this, an electrolytic chemistry, the experience and the know-how of operating such a process are extremely important. Olin had a process in its research laboratories but it certainly hadn't developed to the point where we had any confidence that any plant could use it at that time.

Secondly was the economics of the program; the economics for the individual plant that had been recommended a year before at McIntosh was not adequate, and the Pennsalt joint venture was marginal but adequate.

Thirdly was the matter of financing. We had not yet gotten out of the woods financially and were trying to stretch our capital expenditure dollars as far as they would [fol. 315] go. A joint venture provides two corporations with a vehicle for financing on a low equity basis, borrowing the funds for the balance of the amount and thus being able to build a plant which we at that particular time did not feel we should spend seven million dollars to build.

By the Court:

Q. Mr. Osborne, could you elaborate a little on your second point; the economics? You said that the economics of the McIntosh plant was not justified but the economics of the joint venture appeared to be. Could you elaborate a little on that point? I am not sure that I understand what you have in mind.

A. The McIntosh plant, as I recall, your Honor, was a

15,000 ton plant. The cost of that plant and the net return after sales were made at the estimated cost and profits, the net return was below the 10% minimum that we hoped to achieve as a return on investment.

Q. That is 10% of your capital investment in that plant?

A. Yes, sir. The return of the larger plant, 25,000 tons at the time, in February, estimated to be the capacity of the Penn-Olin plant at Calvert City, did return somewhat closer to 10%, just under 10%. The important thing, therefore, was a financing means.

[fol. 316] Q. What was the estimated rate of return on your McIntosh plant?

A. I don't recall the exact figure, sir. I think there was figures in the Whither Report that were something like 11%, but when studied that came down well under ten.

By Mr. Connelly:

Q. Mr. Osborne, in answer to the court's question you referred to a 10% rate of return. Is that before or after taxes?

A. After taxes?

Q. In connection with your consideration of that proposal at that time, was the factor of the balance sheet treatment of the obligation of Penn-Olin a consideration that you took into account?

A. Very much so.

Q. Would you explain that please?

A. In a joint company of this sort, it was expected that with an over-all cost of $7,000,000 for the plant, that Pennsalt and Olin would each put in $1,500,000 in equity, and that $4,500,000 would be borrowed from lending institutions.

A joint company of this sort in which each company owns 50%, and not over 51% on any one company's part, permits you to have the debt of that subsidiary company [fol. 317] off your balance sheet. The only part of that would be the asset in the equity.

By the Court:

Q. You don't consolidate them?

A. You do not consolidate them. Therefore it would be a note to your balance sheet stating that Penn-Olin owes Bank X $4,500,000, and that's all.

Q. Whereas if it were a venture division, or part of a division, you would show the borrowed funds as a corporate liability?

A. Yes, sir. Not only that, but it would stand against your over-all credit and your over-all borrowing capacity under the many indentures that corporations of our size have, and therefore would eat into your free borrowing capacity, whereas in a joint venture it does not.

By Mr. Connelly:

Q. Following the execution of the February 11, 1960, letter agreement, what if any further action did the Olin corporate staff take with reference to the proposed joint venture?

A. There was a difference of opinion between the Olin corporate staff and the Chemicals Division as to the advisability of Olin entering into the chlorate field, and as a result of that I appointed a so-called Evaluation Com- [fol. 318] mittee, chairmanned by a Vice President for development, Russell Hopkinson, to study the entire matter of chlorate and to make a recommendation to me at an early date.

By the Court:

Q. As of what date are you speaking?

A. After February 11th when the letter of intent, so-called letter of intent, was signed.

Q. Wasn't that a binding commitment subject to a more definitive specification of terms? I haven't read the letter of intent.

A. No, sir, I don't think it was a binding commitment. It was writing the basis upon which an agreement would be reached, but it certainly was subject to action by the boards of directors of both companies and further action by management.

Mr. Connelly: If your Honor will look at the last page, paragraph 6 states:

> "It is recognized that a definitive contract in greater detail will be necessary to cover the provisions of this letter respecting the selection of a sodium chlorate process and the formation of Penn-Olin and other matters relating thereto. Both parties agree to negotiate in good faith for the purpose of reaching a mutual [fol. 319] agreement on the provisions of definitive contract that will be consistent with the understandings above set forth. If the definitive contract is not agreed upon and executed by both parties within a reasonable time after date of acceptance of this letter, both parties will be relieved of all further obligations under this letter."

The Court: I would suppose that that provision would foreclose further consideration of the feasibility of the project, as seems to be suggested by the last testimony. But I will hear the testimony.

Mr. Connelly: Yes. It is for that reason that I wanted to bring out that there was in fact further consideration given by both parties to this proposed joint venture.

By Mr. Connelly:

Q. Did there come a time, Mr. Osborne, when the Capital Appropriations Request Committee expressed a view with reference to the desirability of proceeding with this proposed joint venture?

A. I believe some time in late July of 1960 the Capital Appropriations Committee recommended against proceeding with the joint venture.

Q. I show you Plaintiff's Exhibit 243, a memorandum [fol. 320] entitled "C.A.R. Committee Discussion." Does that "C.A.R." refer to Capital Appropriations Request?

A. Yes, sir.

Q. The date of it is July 29, 1960 and it is written by Mr. R. L. Dietrich as secretary to the C.A.R. Committee. Is that the report to which you just referred?

A. Yes, sir.

Q. And that contained the statement that the committee unanimously recommended that the project should be re-

jected. Was that the report that was made to you at that time?

A. That's right.

Q. What happened next, Mr. Osborne?

The Court: Was it your view, Mr. Osborne, that the terms of your letter of intent of February 11, 1960, permitted a rejection by Olin in July of 1960, if that had been the ultimate decision arrived at after receipt of this C.A.R. Committee discussion?

The Witness: As of this date, yes, sir.

The Court: You mean as of July 29, 1960?

The Witness: Yes, sir.

By Mr. Connelly:

Q. What happened after receipt of that report, Mr. Osborne?

[fol. 321] A. After receipt of that report I considered it and decided that the division had a right of appeal to this particular decision, and a meeting was called, shortly after that report was issued, to hear both sides give me their views as to the pros and cons and whether this should be upheld or the division's recommendation should be upheld.

Q. When you say both sides, to whom do you refer?

A. The C.A.R. Committee that recommended against it and the Chemicals Division which was still recommending in favor of it, because Mr. Block asked for it.

Q. By the Chemicals Division there do you refer to Mr. Block specifically?

A. Well, Mr. Block and his associates in the division, Mr. Logan and others.

Q. I show you now Plaintiff's Exhibit 245, being a document headed, "Penn-Olin Sodium Chlorate Plant," dated August 1, 1960, which starts out with the statement that a special meeting was called by Mr. Osborne to discuss the Penn-Olin proposal, C.A.R., with the number following it, on August 1, 1960. Is that the meeting to which you just referred?

A. Yes, sir.

Q. Does that document set forth the pros and cons that [fol. 322] were stated to you on that occasion as to the desirability of proceeding or not proceeding with the proposed joint venture?

A. Yes, sir.

Q. What conclusion did you reach as a result of that reconsideration?

A. That the joint venture should not go on, from Olin's standpoint, that the return was too low based on the figures that were being given us, and that certain market considerations, were unattractive, and that therefore we should discuss with Pennsalt the abandonment of the joint venture.

The Court: And I suppose the additional reasons which are set forth on page 4 of Plaintiff's Exhibit 245?

The Witness: Yes, sir.

By Mr. Connelly:

Q. Was any further consideration or reconsideration given to the venture by the Olin corporate staff?

A. Yes, sir.

Q. What happened next?

A. After I returned to my office after having rendered this decision, Mr. Block followed me and said, "I am not going to take that because I think this is a good product and is something that we should have," and immediately [fol. 323] proceeded to activate the engineering operations of his own division and to try to bring the rate of return up to a point where the C.A.R. Committee would change its view. He also requested a meeting with the Pennsalt people for some time during the next few weeks to discuss this matter with him.

Q. Following that meeting was there in fact any further submission to you and to corporate staff of any revised figures or estimates?

A. There were before the matter was finally approved, but I do not know whether there were before the meeting with the Pennsalt people.

Q. What next in connection with your consideration of this venture, what happened next?

A. As I recall it the next thing was a meeting with Mr. Drake, the President of Pennsalt, and his associates some time in the middle of August, as I recall, in our New York office to consider or reconsider the decision of February 11 to go into the joint venture.

By the Court:

Q. In other words, to discuss the abandonment of it?

A. To discuss the abandonment, and discuss the problems attendant thereto, because some moneys had obviously been spent during that period.

[fol. 324] By Mr. Connelly:

Q. What happened on that occasion?

A. On that occasion Mr. Drake told us that, first of all, he had gone to his board of directors and had had approval of the project; secondly, that the Pennsalt engineers did not agree with our figures. They felt we were far too conservative and that the rate of production or the rated capacity of the plant would be greater than our engineering staff had said, 25,000, and they felt the capacity was easily 26,500.

As a result, and including the fact that we had been working with Pennsalt for six months on this matter, and the fact that the rate of return appeared to be better, and actually, the capital expenditure to be lower on re-estimates I decided that the thing to do was to review the matter again, which was done in the succeeding week or two, and the capital asset appropriation was approved, I believe, the end of August or early September.

Q. I show you Plaintiff's Exhibit 253, which is entitled, "Capital Appropriations Request," and the date on it is August 29, 1960, and ask you whether that is the formal approval of which you just testified?

A. Yes.

Q. You mentioned in your testimony earlier, Mr. Os-
[fol. 325] borne, the arrangements that you contemplated for financing Penn-Olin. What are the present financial arrangements under which Penn-Olin is in existence?

A. Unfortunately because of the action by the Government it has not—it has been impossible to have any outside financing, and both Pennsalt and we have put up our share of three and a half million plus each.

Q. That three and a half million is currently on the Olin balance sheet, is it not?

A. Yes.

By the Court:

Q. It is an investment, I suppose?
A. It is an investment.

By Mr. Connelly:

Q. You testified earlier, Mr. Osborne, that following the 1959 recommendation of the Chemicals Division for an independent facility for sodium chlorate and its rejection by the staff that there was no subsequent recommendation made by the Chemicals Division for the establishment of an independent plant. Is that correct?

A. Not that I recall.

Q. In your consideration of the proposed joint venture with Pennsalt in February or the early part of 1960, and again through the summer of 1960, as you have testified, did [fol. 326] you take into account the possibility that Olin might desire to make some independent activity in the field of sodium chlorate?

Mr. Freed: I object, your Honor. It is a leading question.

The Court: Read me the question.

(The reporter read the last question as follows:)

"Q. In your consideration of the proposed joint venture with Pennsalt in February or the early part of 1960, and again through the summer of 1960, as you have testified, did you take into account the possibility that Olin might desire to make some independent activity in the field of sodium chlorate?"

The Court: Overruled.

The Witness: In studying any joint venture you obviously take into account whether or not you would go alone. The answer in this case would be we would definitely not go alone.

By Mr. Connelly:

Q. In February of 1960, or in August of 1960, when the capital appropriations request was approved was Olin then——

The Court: Excuse me, before you go to this.

By the Court:

[fol. 327] Q. I want to see whether I understand your last answer. You say a decision was made not to go alone. I take it that was in the context of a decision to go by the joint venture route?

A. Yes.

Q. Did you make any or face the question of whether if there was no joint venture in prospect or it was impossible for any reason, did you face the question of whether or not you would go it alone?

A. Yes, I did.

Q. What was your decision?

A. The answer was that we would not.

Mr. Connelly: You may examine.

Cross-examination

By Mr. Freed:

Q. Mr. Osborne, when did you make the decision which you just referred to in your answer to the Judge wholly independent of a joint venture that Olin would not go alone?

A. I think that is a decision that—I couldn't possibly give you an exact date that it finally crystallized as a separate decision. It was a series of events that came to an over-all decision that we would not go it alone, and that therefore the joint venture was the one way for us to go [fol. 328] into this business.

Q. Without reference to the joint venture, Mr. Osborne, would you tell the court the circumstances under which Olin addressed itself to the single question, "Will we go into sodium chlorate by ourselves?"

A. I think the only time the corporation—And I would like to, Mr. Free, differentiate between the corporation and the Chemicals Division, because the divisions in our company consider many routes that they like to come down, new products, new processes, and so forth, all of which must be passed on by the corporation.

I am now addressing myself only to the corporate decision, and I think the only corporate decision that was ac-

tually reached was the one in April of 1959, when we decided that we would not go down the route of going alone at McIntosh, Alabama.

Q. Between the decision in April of 1959 with respect to McIntosh, and the time that your company entered into joint venture negotiations with Pennsalt, did you again review on a corporate management level the question of whether or not Olin would go it alone?

A. I do not recall that it was formally proposed, because we had no formal proposal before us. It was certainly a question which I took into consideration in my decision of [fol. 329] going ahead with the joint venture.

Q. Mr. Osborne, following the decision discussed in Plaintiff's Exhibit 34——

The Court: What is that exhibit?

Mr. Freed: Your Honor, that is the minutes, the extracts of the minutes of the meeting of April 23, 1959, notes of the Chemical staff meeting, the Thursday, April 16, 1959.

By Mr. Freed:

Q. Mr. Osborne, you will recall that the court asked you whether these studies referred to on the second page under the letter "F" were made prior to the revision of the Whither Report estimates in October of 1959, and your answer was yes.

Did you personally pass on the results of the re-evaluation under those questions asked on page 2?

A. Not that I recall, Mr. Freed.

Q. Then there was no corporate review of the sodium chlorate project at McIntosh after the studies referred to in Plaintiff's Exhibit 34. Is that right?

A. I do not recall any. As far as I am concerned it did not come up for any decision, as I recall.

Q. I believe you testified with reference to Plaintiff's Exhibit 253, which is the one-page capital appropriations [fol. 330] request document, dated August 29, 1960, that that date on that document represented final approval by Olin of the Penn-Olin venture. Is that correct?

A. Unless you mean the next steps of taking it finally to the board of directors.

Q. Then this did not represent final approval as of August 29?

A. It represented management's final approval with succeeding steps being the procedural steps required to finally get the approvals of the whole corporate entity.

Q. Does corporate approval require your signature?

A. Yes.

Q. Does this document contain your signature?

A. No.

Q. What was the date on which the corporation actually approved the Penn-Olin venture finally?

A. I cannot give you that exact date. I would say it was some time in September.

By the Court:

Q. 1960?

A. Yes.

By Mr. Freed:

Q. Will you return your attention to the Whither Report of April, 1959, which is Plaintiff's Exhibit 32, and on page 45 of that document, to the 11% return on investment men-
[fol. 331] tioned for a plant, a sodium chlorate plant at McIntosh.

Will you tell us when the studies were made which convinced you, as you stated in your direct testimony, that these figures were wrong?

A. I cannot give you a definitive date at all because the only attention or the only place that my attention was drawn to this was the meeting of the Chemicals Division and the staff on April 23, 1959, in which it was decided against going ahead with this; and as far as the studies themselves are concerned I had no knowledge of the studies in detail.

Q. Then you do not know of any written studies whatsoever which reduced the return on investment from 11% at McIntosh. Is that correct?

A. I do not recall them.

Q. Turn your attention now, Mr. Osborne, to page 51 of Plaintiff's Exhibit 32. Excuse me. There are two page

51's to it, April of 1959 and October of 1959, the Whither exhibit.

The first page 51 has a label on it in the upper left hand corner, "Exhibit 30", and the second page which is numbered 51 reads in the upper left hand corner, "Exhibit 30, Revised 10-59."

Is that the revision in the Whither Report of October of [fol. 332] 1959?

A. I would judge so; yes.

Q. Will you tell the court what the return on investment for the sodium chlorate plant at Chattanooga is as revealed by this document?

A. The return on the investment estimated at Chattanooga was 13.1%.

Q. Do you have any studies or know of any studies or documents that impeach the validity of that estimate?

A. I do not know of any formal studies that were made on this because Chattanooga was never in the running. This was merely a Chemicals Division suggestion by which they had placed before the corporation a desire to have an electrolytic plant in the Tennessee Valley. It never came to the corporation for decision.

Q. Does Olin today have under construction an electrolytic plant in the Tennessee Valley area?

A. Yes.

Q. Where is that plant?

A. Charleston, Tennessee.

Q. How far is that from Chattanooga?

A. I do not know. I cannot tell you the exact mileage.

By the Court:

[fol. 333] Q. Is it 25 miles or 100 miles?

A. No, it is probably over a hundred miles, your Honor.

By Mr. Freed:

Q. You would be willing to defer on the distance between the two points to a map?

A. I certainly would.

Q. To your knowledge, Mr. Osborne, were the estimates which are projected in this Whither Report for an Olin sodium chlorate plant at Chattanooga, were they ever re-

vised or modified in the same manner with the same kind of savings that was done in the case of the Penn-Olin venture a year later in August of 1960?

A. I should like to——

By the Court:

Q. Can you answer that question, and then go on with your digression if you like to?

A. The answer is no, but I should like to explain that the Chattanooga sodium chlorate plant was merely an addendum to a chlorine plant which is a very expensive venture, and that without the chlorine plant at Chattanooga there never could be a sodium chlorate plant because the sodium chlorate plant built on grass roots is a highly uneconomic affair, it must be a part and parcel plant to some other plant, and the Chattanooga chlorine plant, to my recollection, did not come up at any time for decision by the corporate staff [fol. 334] or by me.

By Mr. Freed:

Q. What kind of plant is Olin building today at Charleston, Tennessee?

A. A chlorine caustic plant, which was decided upon at a later date.

Q. Mr. Osborne, did Olin bury the Chattanooga, Tennessee project finally at a corporate level, prior to the inception of the Penn-Olin negotiations?

A. I am afraid, Mr. Freed, you have got to have a live body or a body in order to bury it. I do not think this ever became a corporate body.

Q. This never reached the corporate level?

A. Not to my level.

By the Court:

Q. I have not read this Exhibit 32, Mr. Osborne, but do I understand that the Chattanooga project was a project which had the endorsement of the Chemicals Division?

A. It was a proposal, let us put it they way.

Q. With its sponsorship?

A. It had sponsorship, but this was part of an overall program. They also had another chlorine plant on the Des

Plains River in Illinois. They had an expansion of the McIntosh chlorine caustic plant. They had some others that [fol. 335] they proposed, which did not mean in any manner that they had the corporate approval to go ahead.

Q. Didn't these proposals come before whatever corporate body had the responsibility for placing its stamp or approval or stamp of rejection on the propsal? Didn't it come before the corporate body?

A. Yes. And if it please your Honor I would like to explain this, because a number of the other divisions have made specific programmed proposals which have been accepted as a program and voted on through to the board of directors, such as the Brass Division has a programmed six-year capital expenditure program—I am sorry for the redundancy—which has been approved as a program, and they are now working under that program for specific items. The Chemicals Division has never had an approved Whither program.

Q. I am not sure that I quite understand. Let us talk about the Chattanooga project recommendation which is referred to in this Exhibit 32. Did that come before the persons charged with corporate responsibility of approving or rejecting, or did it not?

A. It was described to the staff and to me and no action was taken.

Q. No action, either approving or disapproving?

[fol. 336] A. No.

By Mr. Freed:

Q. Did you participate in the negotiations with Pennsalt prior to the February 11, 1960, joint venture agreement?

A. No.

By the Court:

Q. I am going to come back to my question. Why was no action taken either approving or disapproving action? Why was the matter tabled without action, so to speak?

A. Because, as I recall it, the Whither Report of the Chemicals Division totaled in expenditures somewhat in excess of $80,000,000, and I think it went up from $60,000,000 to $90,00,000 as a whole, which was a sum of money which

we did not have, nor did we feel we could spend in the Chemicals Division on a programmed basis, so the program as a whole was never put into motion, only pieces of it came up from time to time.

By Mr. Freed:

Q. Following preparation of the October, 1959, revision of the Whither Report was the Chemicals Division ordered or instructed by corporate management to drop the Chattanooga project?

A. That I cannot recall.

[fol. 337] Q. Are you aware, Mr. Osborne, that during the negotiations between Pennsalt and Olin preceding the joint venture agreement of February 11, 1960, Chattanooga and Calvert City, were considered as alternatives by the negotiators for the location of a sodium chlorate plant?

A. Not to my own knowledge.

Q. Mr. Osborne, Mr. Connelly asked you whether potassium chlorate and perchlorates had been excluded from Penn-Olin, and your response was that no consideration has been given to them.

Can you tell us whether and in what manner potassium chlorate and perchlorates have been excluded from Penn-Olin?

A. As I recall, the definitive agreements as of today do not include potassium chlorate and/or perchlorates as a joint venturing pair of products.

Q. Then the present understanding of the parties at the moment is that there will be no product at the moment other than sodium chlorate. Is that correct?

That is as far as the matter of other products goes?

A. That is correct.

Mr. Freed: Your witness, Mr. Connelly.

[fol. 338] Redirect examination.

By Mr. Connelly:

Q. Mr. Osborne, would you look again, please, at Plaintiff's Exhibit 32, being the 1959 Whither Report, Chemicals Division. Your attention was called on cross-examination to page 51, which is identified as Exhibit 30, and to the sec-

ond page 51 which is identified as "Exhibit 30, Rev. 10-59."

Will you also look at Plaintiff's Exhibit 34, which is the record of the meeting on April 16, 1959, at which the recommendation of the Chemicals Division with reference to sodium chlorate was acted upon.

At that April of 1959 meeting was the second schedule Exhibit 30, revised, October, 1959, page 51, a part of the document considered by the meeting?

A. The revision?

Q. Yes.

A. The revision was in October, and the meeting was in April.

Q. So far as the meeting in April is concerned, that dealt with the data on the first Exhibit 30 which refers to a chlorine caustic plant at McIntosh. Is that correct?

A. Correct.

Q. And it did not refer to a plant at Chattanooga?

[fol. 339] A. That is right, it did not.

Q. Was there at any time after April of 1959 any revision of the 1959 Whither Report which revised page 18, the first full page of the document?

A. I do not recall it, Mr. Connelly.

Q. Was there at any future time, any time subsequent to April, 1959, any formal revision of the recommendation of the Chemicals Division to reflect the data incorporated on the second Exhibit 30, of October, 1959?

A. I do not believe so.

Q. Was there any meeting at which the corporate staff was called upon or asked by the Chemicals Division to reconsider their recommendation in the light of those October, 1959, revisions?

A. I do not recall such a meeting.

Mr. Connelly: That's all.

Mr. Freed: No further questions, your Honor.

(Witness excused.)

* * * * * * *

JOHN O. LOGAN, a witness called by the defendant Olin Mathieson Chemical Company, being first duly sworn, testified as follows:

[fol. 340] Direct examination.

By Mr. Connelly:

Q. Mr. Logan, are you presently employed by the defendant, Olin Mathieson Chemical Corporation?

A. Yes, sir.

Q. In what capacity?

A. I am a Vice President and General Manager of the Chemicals Division.

Q. How long have you held that position?

A. I have been a Vice President for between two and three years, and General Manager of the Chemicals Division since early this year.

Q. Did you succeed Mr. Block in that position as General Manager of the Chemicals Division?

A. That is correct.

Q. When were you first employed by Olin Mathieson or any of its predecessor companies?

A. I was employed by Mathieson Alkali Works in 1931.

Q. Will you describe briefly the nature of your experience and positions with the company since that time?

A. I started in the research department and was there approximately six years, and then moved into product and market development work for a period of years, finally into the sales department, and was District Sales Manager in [fol. 341] Chicago for a period of time, Assistant Director of Sales to the Industrial Chemicals Division, and eventually into general management.

Q. It has been testified here that the Chemicals Division of Olin itself has certain subdivisions. Will you please describe those subdivisions and the general nature of the products produced and sold by each?

A. At the present time, the Chemicals Division consists of three units that formerly operated as independent divisions. One of these is the Agricultural Department, that formerly was the Agricultural Division, that makes and

sells fertilizer products, insecticides, and other items that go to the farm trade.

The second unit is the Phosphate Department, that was formerly the Blockson Chemical Company, that has a plant in Joliet, Illinois and produces sulphuric acid, phosphoric acid, industrial phosphates for the detergent trade, and related products.

The third segment, and the largest of the three, is the industrial segment that formerly was Mathieson Alkali Works, and then Mathieson Chemical, and then Industrial Chemicals Division. It makes a line of heavy chemicals, sulphuric acid, caustic soda, chlorine, soda ash, ammonia, derived products therefrom, and certain specialty items.

[fol. 342] Q. Have those three divisions or departments that you have just described been in existence since 1958 or 1957?

A. The three units have been in existence independently prior to that time, and at the time Mr. Block was named head of the Chemicals Division several years ago, the three units, plus what is now Organics Chemical Unit, was placed under Mr. Block's responsibility and the three units have been maintained pretty much independently up until this year.

Q. So that there has not been any change in the organization that you have described during the period 1957 through 1960?

A. Only by the elimination of the organic segment that was removed and put into a separate division.

Q. What are the products, since you have mentioned the Organics Division, what are the products which are dealt with by that division of the company?

A. As Mr. Osborne described, this consists of several phases, including certain work in the energy field, certain propellant work for the Government, and also embodies what was formerly a part of the Chemicals Division, namely, a line of ethylene and propylene chemicals, based on natural gas produced at the company's plant in Kentucky.

Q. Do you personally have anything to do with the operation of the Organics Division?

[fol. 343] A. I no longer have any responsibility for that, no, sir.

Q. In connection with the various subdivisions and products of the Chemicals Division, is there a difference be-

tween chemicals which are described as heavy chemicals and those which are described as specialties, in terms of marketing practices?

A. Yes, there is a difference. The so-called heavy chemicals are large volume bulk items that are basic raw materials for industry of all types, and are generally sold to consumers who are industries in all of the ramifications of our economy.

The specialties are generally lower volume items, sometimes trade-marked items and sometimes more complex technically, with rather specialized applications that are sold generally through distribution channels to ultimate consumers as distinct from going directly to industry as a user.

Q. During the period 1957 through 1960 how large a sales force or sales forces has the Chemicals Division maintained?

A. With respect to the three present segments of the Chemicals Division, we have had approximately 50 to 65 people in the field in the area of phosphates and industrial [fol. 344] chemicals, and the argricultural group has had somewhere around 100 people in the field.

Q. What about the geographic distribution of those sales personnel?

A. They are primarily concentrated in the eastern half of the country, in terms of the industrial segment, namely, Blockson and Industrial Chemicals. Mathieson got its origin in the southeast, in Saltville, Virginia, and hence our development has been very largely associated with the southeastern segment of the country.

We also had a very early plant at Niagara Falls, New York, so we had people in the sales capacity in New England and the upper part of the country.

We have never had industrial chemical facilities west of the Mississippi River, except in recent years on the Gulf, and our effort has therefore been concentrated primarily up and down the country in the eastern segment.

In the agricultural marketing organization we do concentrate up and down the central plains states, the Mississippi Valley. We have a few people across the southern tier of the country as far west as California in the agricultural growing areas.

Q. In the industrial chemicals area, have you maintained during this period of time any salesmen on the West Coast? [fol. 345] A. Yes. We have had one salesman on the West Coast for some years, and at various times there has been a second man. He is primarily concerned with our specialty products because we do not ship any heavy chemicals as such to the West Coast market.

Q. Did there come a time in 1958 when Olin undertook to sell sodium chlorate for the Pennsalt Company?

A. Yes, there did.

Q. Prior to that time had Olin engaged at any time in the sale of sodium chlorate?

A. No, sir, we had not sold sodium chlorate prior to that time.

Q. Prior to that time had Olin ever purchased sodium chlorate as a consumer?

A. Yes, Olin has purchased sodium chlorate for a number of years.

Q. In what general quantities have such purchases been made, and for what use?

A. Well, the quantities have varied from rather modest amounts of a few hundred tons per year up to in recent years they have been in the order of 1,000 to 1500 tons per year, and this has been almost exclusively for our plant at Niagara Falls, New York, used in the production of sodium [fol. 346] chlorite.

Q. Will you describe the product sodium chlorite and its use?

A. Sodium chlorite chemically is somewhat akin to sodium chlorate, and it is also chemically somewhat akin to ordinary sodium hypochlorite, which is the chief component of household bleach. It is intermediate chemically between these two compounds. It has therefore bleaching properties, it has oxidyzing properties, it is more stable than hypochlorite and less stable than chlorate, and it has general application as a rather specialized chemical in the bleaching and oxidyzing field.

Q. For how long a time has Olin been engaged in the sale of sodium chlorite?

A. The sale of sodium chlorite began in the middle part of the 1930's, the latter years of the 1930's.

Q. Has it continued continuously since then?

A. Yes, it has continued since that time.

Q. What were the end uses for which it was initially created and sold?

A. It was initially developed because it had been reported in the technical literature, and our research had confirmed these reports, that sodium chlorite and chlorine dioxide, [fol. 347] which can be developed from sodium chlorite, had the power of bleaching impurities out of impure cellulose, without damaging the cellulose itself.

In other words, cellulosic material, such as paper or textile, could be treated with this reagent under certain conditions, and you could bleach the product to a high brightness without damaging the basic cellulose fibre itself.

Q. Was it sold then to consumers in the pulp and paper industry?

A. Yes. We attempted to develop its use in the pulp and paper field because it was obvious that in getting to high brightness of paper there were certain damaging characteristics of existing bleaching agents, and we proposed to promote sodium chlorite for the purpose of reaching higher brightness with minimal damage.

Q. What has happened over the years with respect to that promotional plan of the company?

A. Well, it worked reasonably well for a period of time, and sales to the paper industry increased modestly until about the time of the war, 1939 and 1940. They fell off at that stage, and along the way other uses were also being studied, and sales have continued today primarily in other areas of application.

[fol. 348] Q. Did there come a time when the use of sodium chlorite for bleaching pulp and paper products was determined to be not a commercially feasible project?

A. Yes. This developed following the war. One of the first actions taken at the time of the war was the allocation of chlorine, which is the basic bleaching agent.

The Court: What war?

The Witness: World War II, 1939-'40.

Chlorine is an item that has always been put under allocation control during wartime, and at this time the general bleaching of paper was restricted due to the limitations on chlorine and also limitations that were imposed upon the

maximum brightness to which paper could be bleached. So that during the period of the war there was essentially no demand for high brightness pulp, and conventional bleaching agents were entirely satisfactory.

Following the war period, up until roughly 1950, the demand for paper products was sufficient so that there was no competitive pressure to force higher brightness papers. Consequently, there was not much done during the period 1940 to 1950 in the way of producing high brightness paper, and hence there was essentially no market for sodium chlorite for this purpose. It was used as an emergency bleaching agent under certain unusual conditions. [fol. 349] Along around 1950 and in the 1950's, the demand for higher brightness papers developed again, and at this stage the treatment seemed to be adapted to use of chlorine dioxide, for various reasons, rather than a continued use of sodium chlorite. So sodium chlorite was eventually displaced as a high brightness pulp bleaching agent.

By Mr. Connelly:

Q. When did you begin to purchase sodium chlorate for use in connection with your production of sodium chlorite?

A. I don't have an exact date. When we first started making sodium chlorite we did generate some chlorate solutions chemically, and we used these for a period of time, and I would judge it was during the latter part of the 1930's that we started buying chlorate for this purpose.

Q. When you speak of the generation of sodium chlorate in the production of sodium chlorite in your initial process, will you explain how that is brought about?

A. It is possible to take chlorine, which is one of our basic commodities, and react it with alkali, either caustic soda or soda ash, both of which were basic products to our company at that time, and by controlling the conditions you can produce a solution containing sodium chlorate. And for a long period of time we thought this was the way to provide our chlorate raw material for the production of chlorite. We [fol. 350] did this in our early pilot plant operations and in our early commercial operations.

Q. What were the considerations that led you to abandon that process in favor of purchasing sodium chlorate from others?

A. Well, there were several. First of all, it is a pretty messy operation. It is not a nice thing to carry out in the plant. You tend to get foaming and spillage over your tanks, and a lot of operating difficulties. The main reason is that you do have a saturated solution of sodium chloride present when you chlorinate that way, and this is somewhat objectionable. You also have limitations on the concentration that you can make conveniently, and you have handling problems, and so forth.

But the major factor really is the fact that the raw materials going into sodium chlorate produced this way are more valuable when sold in their natural form rather than converting them to chlorate. So that as long as we could sell our chlorine and caustic or soda ash, there was no economic incentive to turning them into sodium chlorate.

Q. Apart from that transitional production of sodium chlorate that you have described in connection with the production of sodium chlorite, has Olin ever engaged in the production for commercial use of sodium chlorate?

[fol. 351] A. No, sir, it has not.

Q. Reference has been made in prior testimony, Mr. Logan, to processes described as Mathieson processes, one for the generation of chlorine dioxide and the other for the use of chlorine dioxide in the bleaching of pulp and paper. Will you please describe first the process identified as the Mathieson process for the generation of chlorine dioxide?

A. The process as it presently is operated is the result of a number of years of evolution, going back to the original process that we used in our sodium chlorite plant. As it is now operated, it consists essentially of reducing a sodium chlorite solution by the introduction of sulphur dioxide under controlled conditions of concentration and temperature, acidity and so forth, and the chlorine dioxide is evolved from this generator.

Q. Does Olin own patents on either the process, the generating process, or equipment for the process?

A. During the years since the early '30's Olin and its predecessor Mathieson applied for and received a number of patents in the area of chlorine dioxide generation. Some of these are still in force, and some of them have expired.

Q. What has been the practice of Olin Mathieson with re-

ference to offering the use of that process to the pulp and [fol. 352] paper industry?

A. The chlorine dioxide generation process has been offered to the pulp and paper industry in recent years on a free basis with some service on our part to adapt the operating conditions to the customer's specific requirements and conditions that prevail in his mill.

Q. Did Olin ever offer the use of that process on a royalty basis to paper mills in the United States?

A. We never offered the process for generation on a royalty basis to mills.

Q. Is that process available today to any paper mill that may request it?

A. Yes, it is.

Q. Are there other processes for the generation of chlorine dioxide for the same purpose now in existence?

A. There are a number of processes by which chlorine dioxide can be generated. The ones commercially available today are quite limited. There is the so-called Mathieson process, there is the Solvay process, there is a modified Mathieson process known as the Rapson process.

Q. You mentioned the Solvay process. Is that the Solvay Division of the Allied Chemical Corporation?

A. Yes.

[fol. 353] Q. How does that differ, just in general terms, from the Mathieson process?

A. The primary difference is in the second major ingredient, namely the reducing agent, and the Solvay process employs methanol for that purpose, whereas the Mathieson process uses sulphur dioxide.

Q. What about the Rapson process?

A. The Rapson process is essentially a modified version of the Mathieson process where the conditions in the generation solution are modified and controlled in conformity with the Rapson ideas as to maximum or optimum operation.

Q. Is that Rapson process identified with any particular company or producer?

A. It is now associated with the Hooker Company. Dr. Rapson having been a Canadian who developed this process in Canada.

Q. Are all three of those processes that you have men-

tioned, the Mathieson, Sulvay and Rapson, available generally to the pulp and paper trade today?

A. As far as I know they are.

Q. Has that been true for the past several years?

A. Yes, this has been true.

Q. With reference to the Mathieson process for the use [fol. 354] of chlorine dioxide in the bleaching of cellulose paper pulp, will you state or describe that process, please?

A. Here again there have been a number of processes and modifications developed through the years. It essentially consists of reacting chlorine dioxide with the cellulosic material being bleached, whether it be paper pulp or some other cellulosic material, under conditions of concentration and temperature that produce the bleaching action. The conditions vary considerably from place to place depending upon the local circumstances.

Q. Has Olin or its predecessors held patents with reference to that bleaching process?

A. Yes. We have had a number of patents covering the bleaching of cellulosic materials.

Q. What has been the policy and practice of Olin with reference to the licensing of that process?

A. Going back some years there were certain immunity agreements made with some of the paper companies because we did have valid patents in this field of pulp bleaching, and we made immunity agreements with a number of the companies which simply stated that in view of Mathieson's patents and the use of these procedures under conditions that were described in the Mathieson patents that we, Mathieson, would not sue the paper company and they had the free usage or had the usage of these patents, so to speak.

[fol. 355] Q. Originally was there any royalty or fee arrangement with reference to that grant of immunity?

A. Yes. There was a modest fee. I think there were two fees depending upon the size of the mill and the number of tons to be bleached.

Q. Was there any change in that practice during the years?

A. Yes. Eventually while this practice was in operation the Solvay process was developed and promoted on a free basis and was, in a sense, given to the paper companies, and eventually we decided that our policy would have to follow

that practice and we waived the fee arrangement in these cases both on new agreements and on those then in existence.

Q. Prior to that change in practice with reference to charging the fees did you enter into a license arrangement with the Pennsalt Chemical Company on the subject of the bleaching process?

A. Yes, we did.

Q. I show you Plaintiff's Exhibit 60, which is a letter dated July 31, 1953, and an enclosed memorandum of agreement made as of the same day between Mathieson Chemical Corporation and Pennsalt Manufacturing Company, and ask you whether that is the agreement to which you refer?

[fol. 356] A. Yes.

Q. Will you please explain how this license agreement came about, and what the arrangement was?

A. This arrangement developed out of the fact that the paper industry in the northwest was beginning to become interested in bleaching and in the use of chlorine dioxide for bleaching purposes, and Pennsalt of Washington, specifically Mr. Shanaman, who was then head of that operation consulted with me about the possibility of securing rights under our bleaching patents, and they had become aware of the fact that we had made arrangements with certain paper mills on immunity under our patents, and this agreement is the result of those conversations.

Q. In connection with your negotiations with Pennsalt in that connection did Mr. Drake ultimately take part in the negotiations?

A. I think Mr. Drake ultimately authorized the arrangement and signed the papers. He did not basically engage in the detailed conversations leading up to the consummation of the arrangement.

Q. Going back for a moment to your testimony on the subject of your purchases of sodium chlorate, it has been stipulated here that during the period 1957 to 1960 those purchases averaged about 1300 tons per year.

[fol. 357] Can you tell us what the purchases of sodium chlorate have amounted to during the current year, 1961, Mr. Logan?

A. I believe that they have approached 900 or 1,000 tons

up through September or until about the first of October. I do not have more recent information.

Q. Have your purchases of sodium chlorate all been made from the same supplier?

A. To the best of my recollection they have all essentially been made from the same supplier.

Q. What supplier is that?

A. This has been first the Oldbury Chemical Company at Niagara Falls, and now Hooker, Oldbury having been absorbed by Hooker.

Q. During the period of the past several years have there been sources of supply of sodium chlorate available to Olin other than Hooker's Niagara Falls plant?

A. Yes, there have been.

Q. What other sources of supply have been available?

A. American Potash at Henderson, Nevada, and Pennsalt as a producer on the West Coast, and more recently both Hooker and American Potash have put plants in in the south.

Q. Has Olin ever purchased, so far as you know, any of its requirements of sodium chlorate from Pennsalt?

[fol. 358] A. I think there may have been some small quantities that went to the agricultural operation for some formulation with which I am not familiar, over the years; quite small quantities.

Q. What plant of Olin Mathieson do you rfer to in that connection?

A. This would probably have gone to our Phoenix, Arizona agricultural products facility.

Q. What about purchasing from the Niagara Falls plant about which you testified earlier?

A. We have essentially purchased all of our material from Oldbury, and then Hooker. I think in recent months we have bought some from American Potash for that purpose.

Q. As a purchaser of sodium chlorate, Mr. Logan, what are the considerations which have entered into your selection of Hooker's Niagara Falls as a source of supply from among the various sources of supply available to you?

A. Since this purchase goes back some 25 years or so, at that time Oldbury was essentially the U. S. producer of sodium chlorate, and being quite close to us, in Niagara

Falls, only about a mile down the road, it was quite natural that we would initially make our purchases from them for that reason.

They were a reliable company, had been in business some [fol. 359] time, had had a reputation in this particular field, and primarily because they were so close to us we recognized the fact that this was an economical arrangement for both parties, and therefore was mutually satisfactory and desirable.

Q. Are there any disadvantages in receiving supplies from suppliers located geographically some distance away?

A. Basically there was some disadvantages. You have the problem of service, and the possibility of interruption of that service. Your scheduling and planning has to take into account the transportation time, the possibility of delay at railroad junction points enroute, and that sort of thing. In an emergency of that nature you might be left without a supplier from a distant point.

The other aspect is an economic one, that when you assess against a product the transportation costs, be they either for the producer's or for the consumer's account, you are in essence decreasing the economic attractiveness of this transaction, and therefore this would be less desirable over the long run. A supplier who was shipping material a long distance might, under varying conditions of the market place, decide that he did not want your business and therefore you would be left without a source of supply. Basically a geographical proximity is an important factor in placing your business.

[fol. 360] Q. In the sodium chlorate business are there any recognized geographical separations between markets?

A. The market in recent years has developed primarily around the paper industry as the largest growing consumer, and the paper industry of our country in recent years has been pretty heavily concentrated in the south and southeast area. The older areas of the paper industry are in New England and the Pacific Northwest has had a substantial paper development over the years; but primarily the big pulp and paper producing area is the Pacific Northwest and the south and southeast section of the country.

Q. Turning now to the arrangements that you made for the sale of Pennsalt sodium chlorate beginning in 1958, will

you please look at Plaintiff's Exhibit 101, which is an extract from the minutes of the division management meeting held on December 2, 1957.

Do you recall being present at that meeting, Mr. Logan?

A. Yes.

Q. That minute refers to a possible sales arrangement with Pennsalt for sodium chlorate. Did you have any discussions with any representative of the Pennsalt Company prior to the date of this meeting on that subject?

A. Yes. My recollection is that Fred Shanaman and I [fol. 361] particularly, and even some others of the Pennsalt organization, had discussed the possibility of such a sales arrangement.

Q. Can you fix the time when that initial discussion took place, approximately?

A. I think the conversations probably go back a couple of years prior to this with certain people. I believe there were some conversations in 1955 concerning the possible sale of chlorate or the possible production of chlorate. And then in 1956 there were other conversations, and in 1957 Mr. Shanaman, who then, anticipated having some additional capacity on the West Coast, decided that he would like to make an arrangement with us to move some of that spare capacity.

Q. Had your prior discussion with Mr. Shanaman and others in the Pennsalt organization related to the subject of chlorate generally, or sodium chlorate in a specific geographical area?

A. They had related to sodium chlorate. There was no emphasis on a specific area other than the fact that the conversations centered around our ability to move the product in the paper industry in the south and southeast primarily.

Q. When that discussion got to the point of a suggestion [fol. 362] by Pennsalt, as reflected in these minutes of December 2, 1957, will you state the substance of the conversations that you had with Mr. Shanaman on that subject?

A. The substance of the conversation just prior to this meeting, and subsequent to it, were based on the fact that I did not want to commit our sales organization to undertake this work unless there was some probability at least that it would continue for a period of time, that we would be properly compensated for the effort and that we had an under-

standing as to whether we were going to do this in competition with other people who were going to be selling their chlorate, and so forth.

Q. What was said on the subject of the length or duration of any arrangement that might be considered?

A. I think this followed a pattern of our thinking with regard to any resale effort. We do not wish to engage in a resale activity if it is just for a brief period of time. There is no purpose in it. There has to be some other purpose behind it or it has to extend for a reasonable period of time so that we can get a return on the effort that we put in during the phases of developing the business.

Q. Prior to this December 2, 1957, date had there been any discussion between you and Mr. Shanaman, or others [fol. 363] in Pennsalt, concerning the possibility that such a sales arrangement might lead to something else?

A. Yes. I think this had been generally in the back of our minds as a possibility.

By the Court:

Q. Wasn't the question whether there had been any discussion between you and Mr. Shanaman on the point?

A. Yes.

By Mr. Connelly:

Q. Specifically in that connection had there been any mention made of the possibility of a joint venture?

A. Yes, I think there had been. I believe that some Pennsalt people other than Mr. Shanaman happened to discuss this possibility with me. I believe this was during 1956.

Q. Had those discussions proceeded to the point of making any arrangement by the time of this meeting in December?

A. No, they were primarily concerned with the growing demand for chlorate in the southern paper industry, and how this demand was going to be handled, what should be done about it, and particularly the rather unattractive aspects of the chlorate business generally, and where this was going to lead to in terms of this growing demand.

[fol. 364] Q. Plaintiff's Exhibit 101 states among the points suggested for consideration as the first point adequate commission rate.

Had there been any discussion between you and Mr. Shanaman prior to this meeting as to the amount of commission to be paid Olin?

A. I do not think there was any agreed upon figure; it was understood that we would be compensated.

Q. On a commission basis?

A. Yes.

Q. You have already told us about your discussion on the subject indicated here as an arrangement of three years duration. Item 3 contains the statement:

> "Commission rate to be altered if we become co-adventurers on subsequent planning."

Does that refer to the preliminary discussions that you just testified to?

A. Yes.

Q. With reference to item 4, exclusive rights on the southern territory, what, if any, discussion had you had with Mr. Shanaman prior to this meeting on that subject?

A. This involved the fact that we had our sales force scattered throughout the south, and they were relatively busy on our own products and we wanted to determine [fol. 365] from him whether we were going to be one of several people who were working for him in this connection, or whether we were going to be the sole party tackling this problem.

Q. Will you also explain item 5 of the technical and trade practices to us?

A. This covers such matters as what was the normal contracting procedure, the transportation allowance arrangement, or the freight absorption arrangement, what type of technical literature was necessary to move this product, and so forth; and whether they were going to supply this to us as a part of this effort.

Q. The minutes conclude with the statement, "After discussion it was concluded that Mr. Logan would follow with Pennsalt."

Did you, following this meeting, get into communication with a representative of Pennsalt?

A. Yes. I was in touch with Mr. Shanaman some time over the next week or tend days.

Q. Did you, during the course of those discussions with

Mr. Shanaman, arrive at any understanding of the arrangement under which Olin would operate?

A. We only clarified the general pattern of the relation and we agreed that the details of this arrangement and the details of handling the business pursuant to this ar-
[fol. 366] rangement should be worked out by some of our associates who would be more directly concerned with the actual effort.

Q. Did you arrange with Mr. Shanaman to have a meeting held between representatives of the two companies specifically your subordinates?

A. Yes. We agreed that Mr. Shanaman's representatives would meet with our people in New Orleans, more or less in the immediate future to work out details of proceeding with this arrangement.

Q. I show you Plaintiff's Exhibit 104, which is a letter dated December 17, 1957, from L. M. Shanaman to Mr. Richardson.

I ask you whether Mr. Richardson is one of the individuals that you asked to participate in that discussion?

A. That is correct. Mr. Richardson was in charge of our sales effort, and this program would be carried out under his jurisdiction.

Q. Did he report to you following the New Orleans meeting on the substance of the details that had been discussed in New Orleans?

A. Yes. He reported in essence the same facts that Mr. Shanaman's letter of the 17th refers to.

Q. That is to say that the Plaintiff's Exhibit 104 reflects, as you recall it, the arrangements and details that
[fol. 367] were discussed at that time?

A. That is correct.

Q. Various items referred to in this letter, Mr. Logan, including paragraph number 1:

> "We can make available to you southern sales organization in 1958 2,000 tons of bulk sodium chlorate."

Had that amount been the subject of discussion between you and Mr. Shanaman?

A. We had discussed the general area of this quantity. I think the exact figure of 2,000 was probably finally agreed

upon by our associates, but we had discussed this general area.

Q. What, if any, discussion had you had with Mr. Shanaman and on the subject of paragraph 2 concerning the sales price to the southern mills which this states, "Will, of course, be determined by the prices established by local competition"?

A. I do not recall that we discussed this point in detail. We assumed that we would sell this product on a competitive basis and that there was a current market price and we would follow that published price unless local competition dictated otherwise, and we would encounter this as we began our sales work.

[fol. 368] Q. Had you had any discussion with Mr. Shanaman on the subject of item 3 concerning the distribution of shipments as evenly as possible over the year 1958?

A. In all this type of operation the matter of evenness of shipment is a problem and he worked on a surplus capacity and would probably be more severely restricted, so this was a matter of discussion.

There again I think the statement that they could ship a maximum of four cars per month was something that his associates and mine agreed upon as being the maximum movement in any one month.

[fol. 369] Q. With reference to the discussion of surplus capacity, I think you told us that Mr. Fred Shanaman had advised you that there would be temporary surplus capacity at the Portland plant, is that correct?

A. As I recall, he said that they were undertaking some effort to expand the capacity of their plant and that once this was achieved he would like a means of moving the product until such time as his own marketing organization in the West, and the demand in that area, caught up more or less to his capacity. So this was believed to be temporary in the sense that it was not a continuing long-term, other than the minimum of the two or three years specified.

Q. Incidentally, Mr. Logan, my attention has been called to the fact that in describing this letter, Plaintiff's Exhibit 104, I said that it was written merely by Mr. Shana-

man. Is that the same Mr. Shanaman, Mr. Fred Shanaman, about whom you previously testified?

A. No; there are two Mr. Shanamans. They are brothers. Mr. Fred Shanaman was head of Pennsalt of Washington, and Mr. L. M.—Leroy, or Roy—Shanaman, was sales manager at that time.

Q. Skipping over the next two or three items on the letter, Item No. 7 refers to an account of Pennsalt's de-
[fol. 370] scribed as the Buckeye Cellulose Mill at Foley, Florida. Had it been a subject of discussion between you and Mr. Fred Shanaman before this letter was prepared?

A. Yes. Mr. Shanaman pointed out that they had been working with this one consumer and that he felt certain that his sales people would want to continue that relationship, and therefore it was excluded, so to speak, by Item 7 of this letter and by agreement with our people.

Q. The letter, Plaintiff's Exhibit 104, does not refer to the amount of commission to be paid by Pennsalt to Olin in connection with these sales. Was that amount subsequently established?

A. As I recollect, this amount was not agreed upon by our associates at this meeting, but it was subsequently established, yes.

Q. Do you recall the amount of commission that was subsequently established?

A. I believe it is 5 per cent, which is a fairly common seller's commission in the chemical business.

Q. Did Olin thereafter enter upon the sale of Pennsalt's sodium chlorate on the commission arrangement that you have described?

A. Yes, we did.

[fol. 371] Q. I show you Plaintiff's Exhibit 116, which is a Sales Bulletin of Olin Mathieson, Bulletin No. 1583, dated February 24, 1958, on the subject of sodium chlorate, and ask whether that is the first sales bulletin issued by Olin in this connection?

A. To my knowledge, this is the first sales bulletin, yes.

Q. It has been stipulated also, Mr. Logan, that the sales made by Olin of Pennsalt sodium chlorate amounted to, in 1958, 1,113 tons; in 1959, 1,329 tons; in 1960, 3,228 tons. In connection with Olin's sales of the Pennsalt sodium chlorate throughout that period of time, has there been

any limitation or restriction imposed upon Olin in terms of the sales of sodium chlorate that it might make?

A. No, not as far as I am aware. There have been no limitations imposed.

Mr. Freed: Your Honor, I wonder if in the course of his questioning Mr. Connelly would designate the stipulation where he refers to a stipulation.

The Court: Very well. Do you want that done with reference to the last stipulation that was referred to?

Mr. Freed: Yes, your Honor.

The Court: Will you refer to it, Mr. Connelly?

[fol. 372] Mr. Connelly: Yes, sir. I should have made that reference. Table No. 4 to the general stiplation, which is Plaintiff's Exhibit 414.

By Mr. Connelly:

Q. Mr. Logan, prior to 1960 had you and your associates in the Chemical Division of Olin given consideration to the possibility of having Olin engage independently in the business of producing sodium chlorate commercially?

A. We had given consideration to the production of sodium chlorate at various times through the years. Obviously, I think this consideration included the alternate of doing it independently as well as other possibilities.

Q. What were the factors that you regarded as significant in your consideration of the advisability as to whether or not to recommend a project of that sort?

A. I suppose the factors included——

The Court: You are supposing this or do you know that these are the factors?

The Witness: I'm sorry. The factors that we would normally use in considering this, and I am sure that were used in considering sodium chlorate, included the fact that we had worked with chlorate over a number of years, both as a user and as a firm in the electrochemical business. We [fol. 373] had actually expended some money in research on the electrochemical problems of making chlorate. We saw that we had a growing market demand, largely from an industry that we had been associated with as a supplier for many years, and that this was something that conceivably we should look rather seriously at.

Q. Were there any difficulties that were brought to your attention in your consideration of those possibilities?

A. The primary difficulty, every time we analyzed it, seemed to be the generally unsatisfactory economic return on any product that we could conceive of. The second aspect was that due to pressure of other electrochemical work, namely, the development of new cells that we hoped to put into some of our larger facilities, we just did not devote any extensive attention to the electrochemical problems of sodium chlorate.

Q. Will you look, please, at Plaintiff's Exhibit 15, being the report described as a Whither Report of the Industrial Chemicals Division, under date of April 4, 1958. Did you participate in the preparation of this report, Mr. Logan?

A. Yes, sir, I did.

Q. Will you state generally what was done by you and by your associates in connection with compiling and presenting the data set forth in your Whither Report?

A. The 1958 Whither Report, being the first formal [fol. 374] report of this nature that had been requested by the corporation and had been prepared by the Division, this turned out to be essentially a report on philosophy, as distinguished from a report making certain specific project recommendations.

In this a number of my associates commented on their own thinking, and we pooled this collective opinion, and most of these specific points I edited myself.

Q. On the page headed Section 4, five pages from the end of the document, there is a reference to chlorates and perchlorates, as one of the products that your division should seriously investigate. Had there, prior to that time, been any serious investigation by your division of sodium chlorate as a possible future product?

A. I don't think it had been serious in the sense of bringing the investigation toward some sort of a conclusion. We had carried on various research work over a period of some years, involving certain phases of electrolytic work in connection with chlorate, but we had not seriously investigated it aimed at bringing it to a conclusion.

Q. This report says, with reference to chlorates and perchlorates, merely that the products should be seriously

investigated. Was there any request made at or about the time that this Whither Report was submitted to the corporate management in 1958 for any comment or approval [fol. 375] or disapproval of that particular facet of the report by it?

A. At this particular time there was no specific recommenation made to the corporation regarding these products.

Q. Now will you please look at the 1959 Whither Report, Plaintiff's Exhibit 32. I call your attention specifically to the paragraph toward the bottom of page 18 beginning, "It is recommended that a sodium chlorate facility . . ." etc. Was that the first recommendation made by the Chemicals Division to the corporate management of Olin on the subject of a sodium chlorate facility?

A. To my knowledge, this is the first time a specific location and proposal as to size had been laid in front of the corporation. We did not consider the Whither Report as such as a specific recommendation asking for permission to proceed. This was merely a statement that in our present—as of that moment—our then current opinion, this was something that deserved further study and analysis and the presentation of a program on.

By the Court:

Q. Isn't it a fact, Mr. Logan, that at the bottom of page 18, and the paragraph to which Mr. Connelly has directed your attention, you do say that it is recommended that a [fol. 376] sodium chlorate facility be installed and such facility be ready for operation in 1961?

A. That's right.

Q. That is a fairly definite recommendation.

A. This is correct, but in the context of the Whither Report as it is operated in our company, this in itself does not become a mechanism of action and it would have to be much more explicitly spelled out what we intended to do.

Q. I understand it is not a mechanism of action, but it reflects a conclusion of the author of the Whither Report?

A. This is correct.

By Mr. Connelly:

Q. What action was taken by the corporate staff with reference to that recommendation on sodium chlorate?

A. As I recall the meeting during which this whole report was presented and discussed, the staff had a great many objections to various phases of our report, and specifically said that they didn't feel that this particular project showed any merit worthy of serious consideration by the corporation at that time.

Mr. Freed: Your Honor, I move that the latter answer of the witness be stricken. It is totally hearsay, it is very vague.

[fol. 377] The Court: Will you read that answer?

(The answer was read back by the Reporter.)

The Court: It seems to me that is just the converse of being vague, Mr. Freed. It is rather specific.

Mr. Freed: Your Honor, I call attention to Plaintiff's Exhibit 34, which was previously discussed with Mr. Osborne, which at page 2—this is the evaluation at the April 16, 1959 meeting—on page 2 there is very specific evidence regarding what the action of the committee meeting was on the date of Mr. Logan's conversation, and Mr. Logan is varying this document.

The Court: He is testifying as to his recollection of what happened. It seems to me that the document you referred to may be very potent ammunition on cross examination to probe the mind of the witness. The witness may conceivably withdraw his testimony or change his testimony, or whatnot. But I shall overrule the objection at the present time.

I shall overrule the motion to strike the last answer.

Mr. Freed: On the hearsay ground?

The Court: Your motion is denied.

By Mr. Connelly:

Q. Mr. Logan, at a meeting to consider these suggestions [fol. 378] and comments by the Chemicals Division, was the procedure followed to deal with all of these matters at a single meeting?

A. The procedure was for the Division to come before

the corporate staff and to make its own presentation of the Whither Report. This could be in terms of reading the report, it could be in terms of individuals from the Division getting up in front of the committee and explaining what various segments meant and the reasons why the conclusions were stated in the report.

There are various techniques by which this was and is being done in the company. These meetings usually, there is freedom of discussion back and forth. Certain members of the committee may comment regarding specific segments, and these comments in some cases are individual, but the collective sum of those comments becomes the staff reaction to the Whither Report in toto.

Q. After you received that action by the staff consideration of this proposal, what if anything did you and others in the Chemicals Division do about the sodium chlorate project?

A. Well, at that time we were under the leadership of Mr. Block, who is a rather independent minded individual, having operated his own company for a number of years, and he didn't like to take negative answers. So he and we in the Division exerted some effort to clearing [fol. 379] up the points raised by the staff in discussion and in their formal report and comment on this part of the program, and we carried out several things in an attempt to clarify this recommendation and put it on more sound basis.

Q. Specifically what was done at that time?

A. The staff had had great concern over the Chemicals Division's capital appropriations request. We had a history at that time of asking for things that we didn't back up in terms of either the capital required to conclude the project or the market and profit performance as projected in the C.A.R.'s. So the staff was quite insistent that we clarify this matter of economics, both as to the cost of the facility, the operating and production costs, the market quantities, and so forth, and we had certain of our people pursue this.

The big factor in producing chlorate is electric power. This is a major cost. Mr. Block felt that we had not yet achieved the kind of power situation that would permit us to properly get the kind of return on a sodium chlorate

plant that we should receive. So he had some studies made about power. Some of us looked for other locations. Some of the marketing people continued their study of how much we could sell, and later this year he [fol. 380] had certain studies made regarding the technical information that might be available to us.

Q. Was any investigation made during that period of other processes of producing sodium chlorate?

A. Mr. Block—this is not another process so maybe I misconstrue your question—Mr. Block did have some studies made about the availability of technical know-how on the electrolytic process other than as we had developed it. There was also some consideration of the possibility of reverting back to the chemical production of chlorate, as we had done in our own plant some years earlier.

Q. Was there any investigation at this point of the possibility of obtaining a workable process in Europe?

A. Yes. Mr. Block had Dr. Wocjik contact the Vickers-Krebs Company, who we had understood had a working process, and certain information in this field, and Dr. Wocjik, working for Mr. Block and reporting directly to him, did develop certain information as to the availability of technical know-how.

Q. Who was Dr. Wocjik?

A. Dr. Wocjik had been previously our Director of Research, and at that time he had pretty much left this capacity and was working pretty much directly for Mr. Block as what you might call a scientific adviser.

[fol. 381] Q. In connection with that investigation did you receive any report that there had been developed through the Vickers-Krebs arrangement——

Mr. Freed: I object to that, your Honor. It is leading.

The Court: I think the question had better be completed, then you may state your objection.

Q. (continuing)—a satisfactory process for the production by Olin of sodium chlorate?

The Court: Now, do you make your objection?

Mr. Freed: Yes, your Honor.

The Court: Is your objection that that suggests a yes answer or a no answer?

I'll overrule the objection.

(The question was repeated by the Reporter.)

A. The reports on this investigation were made by Dr. Wocjik directly to Mr. Block. I did receive some copies of information. I also received some verbal comments regarding the status of this work.

It is my understanding that there were certain arrangements possible whereby Vickers-Krebs would make available technical knowledge to Olin, but they also proposed some sort of a development program to be undertaken be-
[fol. 382] tween the two of us to clarify certain ideas they had regarding altering the process, or the equipment for carrying out the process.

Q. Was there during this period of time any further investigation made of possible alternative plant locations, alternative to the McIntosh plant location referred to in the 1959 Whither Report?

A. Yes. We looked at all of our electrolytic operations as potential locations for this type of facility because we felt that the technology carried out here was necessary to do this as an adjunct to a larger facility. But we specifically were looking for locations that improved the power situation, power being the largest single cost in the production of chlorate. None of our existing facilities, existing electrochemical facilities, had any better power than the McIntosh location and therefore we turned in other directions to see if we could find locations where we could solve the problem of power, and via that the problem of economic attractiveness of this project.

Q. In connection with that investigation was any conclusion reached as to the posible availability of a plant site other than McIntosh?

A. We studied the one location that the company had in the TVA power area. This was obviously an attempt to
[fol. 383] use TVA power, which had a lower rate than was applicable at the plant locations where we were then operating facilities. So we said the corporation—not the Chemicals Division but the corporation—has a plant in Chattanooga, maybe we should look at this facility and see whether or not it would be possible to adapt this operation to that specific location. I personally pursued that matter.

Q. Will you look again, please, at the 1959 Whither Report, Plaintiff's Exhibit 32, and specifically the last two

pages, the final page 51 being identified as Exhibit 30, revised October 1959. That contains, does it not, a reference to Chattanooga both for a possible chlorine caustic plant and for a sodium chlorate plant?

A. That is correct.

Q. That Exhibit 3, or Revised Exhibit 30, replaced Exhibit 30 to the original submission, which is on the first page 51, which refers only to McIntosh as the plant site, is that correct?

A. That is correct, yes sir.

Q. What was the occasion of substituting the second Exhibit 30, the revised October 1959 Exhibit 30, for the earlier one?

A. During the period between thee submission of the [fol. 384] report earlier in '59 and the revision as submitted in October 1959, we had further analyzed the total program of the Division, including chlorate, and had concluded that because of the chlorine situation there were certain changes that we should probably alert the corporation to in connection with the program we had submitted as of April. And the revision was primarily intended to convey the impression that rather than following the program outlined in April on plants other than chlorate, we were going to modify that program. We shifted the location of a large chlorine facility between the April submission and the October revision, and this was a matter of such consequence that we simply wanted to convey to the corporation our thinking regarding this revision of our program.

In submitting that revision we also referred to the possibility of a sodium chlorate plant at Chattanooga, Chattanooga essentially being used as the equivalent of TVA power. This is what it meant, really.

Q. Following the preparation of that Revised Exhibit 30, was there any application made to the corporation for a review or reconsideration of the action taken on the recommendation which had been submitted first in April, 1959?

A. No, there was no formal recommendation made. This was in October. We were already in the process of [fol. 385] preparing the Whither Report for the subsequent year to be presented within the first few months of

1960, and we presumably were waiting to include this revision as a recommendation in the program submitted in the next Whither.

The Court: We will adjourn until 2:30 p.m.

(At this point a recess was taken until 2:30 p.m.)

[fol. 386] 2:30 o'clock p.m., The same date.

PRESENT:

As before noted.

JOHN O. LOGAN (Resumed.)

Direct examination (Cont.)

By Mr. Connelly:

Q. Mr. Logan, turning now to the joint venture with Pennsalt described in the letter of February 11, 1960, I believe you told us this morning that from time to time you had had some general discussions with representatives of Pennsalt prior to that date looking toward the possibility of a joint venture. Is that correct?

A. That is correct.

Q. In connection with your discussions with Mr. Fred Shanaman on the subject of having Olin sell for Pennsalt sodium chlorate during 1958 and 1959 and 1960, had there been any discussion at that time with relation to the length of time during which Olin would have such Pennsalt product for sale in conjunction with any joint venture production?

A. I lost your question as to what time you refer to.

[fol. 387] Q. I don't blame you. I rather lost my question myself. I withdraw it.

You told us this morning that you had had some discussion with Mr. Shanaman concerning the length of time during which Pennsalt production would be available to Olin. Is that correct?

A. Correct.

Q. You mentioned in this connection a period of some two or three years. At the same time that was discussed was there any discussion concerning the length of time that would elapse between then and the construction of a sodium chlorate facility if one were to be constructed?

A. At the time we were discussing the sale of the product there was no specific discussion relating to the construction of a facility, or the date at which time such a facility might be constructed.

Q. I show you Plaintiff's Exhibit 111, being a memorandum dated February 4, 1958, from you to the file on the subject of sodium chlorate. That refers, does it not, to a meeting that you had the day before with Messrs. Drake, Shanaman, and Land in Philadelphia. Is that correct?

A. Yes.

Q. After reference to the Pennsalt intention of going [fol. 388] into the perchlorate business at their Portland plant a paragraph reads or it begins:

> "It is felt that neither OM nor Pennsalt should move in the chlorate or perchlorate field without keeping the other party informed, and I agreed to do so."

Will you please state exactly what the substance of your conversation with the Pennsalt people was on that subject of keeping each other informed?

A. We were discussing the matter of the sale of product and the program of such sales effort, and it was felt by us, and equally so I think by the people we were talking to, that should there be any basic decisions or ideas which would change the relationship down the road we should alert each other to this situation so that we would be aware of circumstances and not continue in the dark in carrying forward the program.

By the Court:

Q. You say it was felt by both parties to the conversation. You mean that thought was expressed——

A. This thought was expressed.

Q. —between you and the person you were talking to?

A. Between Mr Shanaman, Mr. Drake, and myself, yes.

[fol. 389] By Mr. Connelly:

Q. Was anything said on the subject of your being free or not being free to take any action that you saw fit with reference to sodium chlorate?

A. No, there was no reference nor any commitment not to take action. There was merely a reference and a commitment to inform the other party if any decisions were made during the course of this relation.

Q. Any decision on what subject?

A. On either the matter of sales, or the matter of production, or any facet of the business that would affect sales or production.

Q. Was there any other commitment, understanding, or agreement made by either of you with reference to sodium chlorate at that time?

A. No. To the best of my recollection there was no other commitment.

Q. Did there come a time when these very general discussions to which you have testified became specific in terms of a concrete proposal for a joint venture?

A. This became specific when the Pennsalt people approached us at the end of 1959 or in January of 1960, I believe it was, and began to outline their thought that [fol. 390] action should be taken.

Q. Would you state for me now as nearly as you can recall who was it on behalf of Pennsalt who approached you at that time?

A. I think it was Mr. Shanaman who brought the subject up, and it was then followed up with later discussions with Mr. Drake and some others of Pennsalt.

Q. Will you please state as nearly as you can recall the substance of the conversations that took place at that time?

A. As I recall Pennsalt stated that under their——

Mr. Freed: Your Honor, I am not quite clear on which conversations with whom the witness is going to testify about, apart from any hearsay objection.

The Court: This is, as I understand it, a conversation which the witness had with Mr. Shanaman concerning some joint activity in the nature of a joint venture.

Mr. Connelly: Perhaps I can clarify it a bit, if Your Honor please.

By Mr. Connelly:

Q. Was there more than one conversation at the end of 1959 and the beginning of 1960 on this subject?

A. As I recall, Mr. Shanaman, who had been the focal [fol. 391] point of Pennsalt's contact with me certainly, expressed the view that they were approaching a time when we should consider this matter and that therefore a meeting should be gotten together on this subject, and there were other people present at this meeting which took place, as I recall, early in 1960, quite early in 1960.

Q. Can you state who else was present at that meeting; anyone else from Olin?

A. Yes. Mr. Block was present. I don't recollect but I think there were a couple of other Mathieson people present at that time.

Q. What about the Pennsalt representatives?

A. Mr. Drake was there, and Mr. Shanaman, and I believe possibly Mr. Willits.

Q. Do you recall where that meeting took place?

A. This particular meeting I am referring to took place in our New York office.

Q. With that background will you proceed to give us the substance of the discussion that took place?

A. The substance of this meeting was that Pennsalt had continued to evaluate sodium chlorate and had concluded that the time was right for us to decide on a joint venture and, in effect, they proposed that we consider this at this [fol. 392] time, and they presented to us certain economic appraisals of the plant that they would propose we set up jointly and stressed the fact that they thought now was an opportune time to reach a conclusion on this particular project.

Q. Was anything said about the capacity of the plant that was proposed to be constructed?

Mr. Freed: Your Honor, before we proceed I do not believe that the witness in his recap of the conversations he has just testified to has fixed a time. There are apparently two series of conversations, one between Mr. Logan and Mr. Shanaman, and a second one between several people from Olin and several from Pennsalt. I don't believe he has fixed a time for this latter conversation.

The Court: I think this, if the record doesn't already show it, and I am not sure whether it does, Mr. Connelly, perhaps you can ask a question or two which will clarify this whole matter of the times of these conferences if the witness is able to separate one from another in his mind.

By Mr. Connelly:

Q. Are you able to place any more definitely than in the early part of 1960 the time of the meeting with which or with respect to which you are now testifying?

[fol. 393] A. The meeting at which there were several representatives from each company was in the latter part of January 1960, as I recall.

Q. Plaintiff's Exhibit 185, Mr. Logan, is a memorandum dated January 22, 1960, from Mr. Block to Mr. Osborne. Are you able to fix the date of the meeting in which or to which you testified with relation to the date of January 22, and was it before or after that?

A. The meeting was just prior to this; whether it was the day before or two days before I do not know exactly.

Q. You were just about, when the question as to time came up, to complete your statement of what took place at that meeting with specific reference to the question that I asked concerning the capacity or proposed capacity of a sodium chlorate plant.

A. As I recall it, the data presented by Pennsalt was based on a plant with a capacity of approximately 25,000 tons, which was larger than had been considered in earlier projects under study by Olin certainly, and this apparently was one of the factors which increased the economic attractiveness of the project and therefore made it desirable to consider it on that basis as opposed to the earlier studies.

Q. Was there anything said on the subject of the plant [fol. 394] location or proposed plant location?

A. I think the Pennsalt people proposed Calvert City because they had a facility in operation there, and land was available, and this chlorate operation could be added to that very conveniently.

Q. Anything else that you recall concerning the substance of that discussion?

A. We discussed the marketing problem in relation to the larger capacity and analyzed the economic data.

Q. Were there subsequent conversations that you had with representatives of Pennsalt between that time and the date of the initial letter of agreement of February 11, 1960?

A. I don't recall any meetings inbetween.

Q. Following those discussions with the Pennsalt representatives did you, the Chemicals Division, of Olin recommend that Olin go along with the proposed joint venture?

A. Yes. We analyzed the data that Pennsalt had presented and the status of our own thinking and concluded that this was the soundest way to proceed, and we recommended that we proceed with the joint venture.

Q. Will you explain to us the reasons that led you to reach that conclusion with reference to the joint venture [fol. 395] as opposed to a possible single independent venture?

A. The reasons were several in number. In the first place, the larger size plant obviously made the project economically more attractive. The suggestion that it be put at Calvert City solved the problem of lower cost of power which had been an obstacle to earlier projects because Calvert City did have available to it power at a reasonable cost.

We had no problem of technical adequacy because Pennsalt was already running a facility and therefore this obstacle which had been prevelant in our own program was solved by going together with Pennsalt.

Q. What about the process?

A. They had the process in hand based on their experience out West, and we were ready to proceed with it in the shortest possible space of time, so this seemed to be a desirable thing to do.

Q. Following the February 11, 1960, agreement between the two companies what happened so far as you were concerned in the consideration of the matter by the Olin personnel?

A. Our sales people again analyzed the market and their ability to handle production from this proposed plant. We reviewed rather thoroughly the economic data that Pennsalt had given us, compared with our own information,

[fol. 396] tried to detect whether it was reliable or where we thought it might be improved upon. We even reviewed the matter of possibly making chlorate via the chemical means as still an alternate that was in the background.

Q. Did you reach any conclusion with reference to that?

A. On that score we merely substantiated again conclusions we had reached essentially at earlier dates that this was not an economically attractive way to produce chlorate, that it was a downgrading of the raw materials that went into the process, and it was not the equivalent of or in any sense attractive in comparison to a good electrolytic operation.

Q. Did you participate in the discussions with the sodium chlorate evaluation committee that Mr. Osborne appointed on February 11, 1960?

A. Yes. This committee under Mr. Hopkinson's chairmanship met and several of us presented our analysis of the Pennsalt program and our own appraisal of the various factors concerned.

Q. Were you advised of the action taken by that committee on or about the first of August of 1960 in recommending that the program be rejected?

A. I was advised. I was not always in the position of receiving this information firsthand since Mr. Block was [fol. 397] head of the division and some of this he got and sometimes I got it by hearsay, and sometimes I got copies of information.

Q. You were present in court this morning, I take it, when Mr. Osborne testified on the subject of the consideration given by the committee in the capital appropriations request committee?

A. Yes.

Q. What, if anything, happened with reference to the presentation of the proposed joint venture program between August 1 of 1960, when the rejection took place, and late August or September when it was finally approved?

A. Well, this goes back to the original idea that Mr. Block had that this was a chemical with a growing demand and that we should have some part in its development, and his dissatisfaction with the idea of dropping the opportunity, dropping this project which represented an opportunity to get into the business. So he kept after sev-

eral of us in the division to keep active in various directions to bring this thing to a successful conclusion or to receive the approval of our management to proceed along the line proposed.

Q. Was there any revision or were there any revisions made in the substance of the joint venture proposal between [fol. 3[illegible]] the action that was taken on August 1, 1960, and the final approval by corporate management?

A. I do not believe there was an significant change in the letter of intent or the format of the joint venture between those dates.

Q. Was there any revision of the data presented with reference to the proposed plant capacity?

A. Yes. There were two parts or two pieces of information concerning the plant; one was the fact that the engineers decided the plant could quite likely be capable of producing 26,500 tons or about 5% more than the 25,000 tons used in the earlier figures. This obviously would enhance the economic attractiveness.

Secondly, some of our engineering people working with the Pennsalt technicians decided that the cost estimates on which earlier decisions had been based were very conservative and contained some "water" in the trade terminology, and that probably some of the capital cost and some of the operating cost could be taken out, and in practice the results therefore would look more attractive.

Q. Was there any revision of the proposal made with reference to the matter of packaging sodium chlorate in drums?

A. As I recall, we had originally contemplated packag- [fol. 399] ing it in drums, and on subsequent investigation decided that this particular part of the market was secondary in nature and that we would not in the early phases of the plant at least install packaging facilities, that we would start out as a bulk operation.

Q. The February 11, 1960, letter of agreement refers in the first paragraph to a joint venture for the manufacturing and marketing of sodium chlorate, potassium chlorate, and perchlorates. What, if any, discussion had taken place prior to then on the subject of the possibility of including potassium chlorate or perchlorates?

A. It is my recollection that there was very little dis-

cussion prior to this time about the inclusion of those items. We in our analysis of this situation recognized that some of these other materials were in a sense dependent upon the basic sodium chlorate plant and that therefore if there was any possibility, or if there was the desirability of at any time in the future being involved in chlorates other than sodium and in perchlorates that we should probably include those as a part of the general or joint venture arrangement.

Q. What, if anything, happened after February 11, 1960, on the subject of including or excluding those other products?

[fol. 400] A. We, in our own organization, had several conversations about this point, particularly the matter of perchlorates, and during these conversations it became apparent that the inclusion of perchlorates was going to complicate the situation. For example, we learned that Pennsalt either was or had done some work in connection with perchlorate and had an interest in it as a defense item.

Our own Energy Division we discovered had also conducted some studies in connection with their program of propellant fuels. Both of these areas of activity involved certain confidentiality and security matters.

Those of us who were considering the problem decided that if we included these in the Penn-Olin situation we were getting ourselves into an area of complications involving security and confidentiality, and we finally decided just to drop them out of the picture.

Q. Can you place the approximate time when that decision was reached?

A. This was going on during the spring and summer of 1960, and I do not believe I can give you an exact date when we decided that we would drop them out.

Q. I show you now, Mr. Logan, the final agreements dated as of January 2, 1961, Plaintiff's Exhibits 181, 182, [fol. 401] and 183. Did you sign those agreements on behalf of Olin?

A. Yes, I did.

Q. I call your attention to the sales agreement, Plaintiff's Exhibit 182, specifically paragraph 12 of that agreement concerning the accounting for sodium chlorate pur-

chases from third parties for Penn-Olin's account by Olin for sale by Olin, and ask you whether any special arrangement has been entered into with reference to the handling of that accounting problem during the pendency of this litigation?

A. The matter of disposing of this has been suspended in effect and in transmitting these agreements to Pennsalt and to Penn-Olin the letter of transmittal, I believe, contained a clause suggesting that this particular activity be suspended pending the litigation and decision reached at the conclusion of litigation as to what the disposition would be of the account involving material purchased during the development period.

Q. Apart from that matter of accounting which you have just referred to do these agreements set forth the entire agreements between Olin and Pennsalt on the subject of the sodium chlorate joint venture?

A. To the best of my knowledge they do.

Q. When, Mr. Logan, did Olin begin making sales for Penn-Olin?

[fol. 402] A. During 1961 we have made sales for the account presumably of Penn-Olin, subject to the agreement here.

Q. Is that selling process continuing up to the present time?

A. This process is going on today, I hope.

Q. Had there been any solicitation of such sales prior to 1961?

A. We had been selling chlorate for the last several years.

Q You are now speaking of the chlorate of Pennsalt sold by Olin as agent?

A. That is correct.

Q. In addition to that have there been any separate solicitations prior to the commencement of the calendar year 1961 of sales for the account of Penn-Olin?

A. There was solicitation during the latter weeks of 1960 leading to a contractual commitment for the calendar year 1961 against which shipments would be made for the Penn-Olin account.

Q. Were there any purchases of sodium chlorate made for that same account prior to 1961?

A. I do not believe there were prior to 1961.

Q. Was any arrangement made with the American Potash Company on the subject of purchases of sodium chlorate?

[fol. 403] A. Yes. There were some negotiations with the American Potash Company and the conclusion of these negotiations was that material would be available from American Potash during 1961 to be used in developing the sales pattern.

By the Court:

Q. Negotiations between Olin or Penn-Olin and American Potash?

A. Olin was authorized by Penn-Olin to enter into these negotiations.

By Mr. Connelly:

Q. Did you participate in those arrangements and negotiations?

A. I participated in the decision to carry on negotiations. I did not participate in the actual negotiations with American Potash.

Q. What was the arrangement made with American Potash in terms of quantity of sodium chlorate covered, the length of time, place of origin?

A. To the best of my recollection American Potash agreed to make available 2500 tons and an upper figure of 14,000 tons, I believe, during the calendar year in cars to be provided by Penn-Olin; certain freight absorption and economic arrangements be made by American Potash [fol. 404] to cover the sales effort.

Q. When did the Penn-Olin plant begin a production of sodium chlorate?

A. It began production during this past September, the latter part of September, I believe.

Q. Immediately prior to the commencement of production by Penn-Olin what were the producing facilities of sodium chlorate then in existence?

A. The facilities then in existence?

Q. I would say within the United States.

A. The facilities in existenee were the Hooker plant at

Niagara Falls, the Pennsalt plant in Washington, the American Potash plant at Henderson, Nevada, the American Potash in Mississippi, and the Hooker plant in Mississippi.

[fol. 405] Q. Since the announcement of the Penn-Olin venture, has there been any other report of additional production of sodium chlorate to your knowledge?

A. There was a report——

Mr. Freed: I object, your Honor.

The Court: State the grounds of your objection, Mr. Freed.

Mr. Freed: It calls for hearsay testimony, your Honor.

The Court: What do you have to say, Mr. Connelly?

Mr. Connelly: I think if counsel desires to object on that ground it is a valid objection.

By Mr. Connelly:

Q. With reference to the quantity of sodium chlorate available in the domestic market, has there been imported sodium chlorate offered for sale in this country?

A. There has been some imported chlorate over the last several years, yes.

Q. Over the last several years has the volume of imported sodium chlorate risen?

A. Yes. To the best of my knowledge it has risen rather substantially.

Q. Do you have any current data or information on the quantity or volume of such imports over the past three years?

[fol. 406] A. I think the last year's imports—that would be 1960—were in the order of 4,000 tons. The prior year, which would be 1959, I believe it was in the order of 2,500 tons. And in the prior year it was about 1200 or 1300 tons.

Mr. Freed: Your Honor, I move that the last question and answer be stricken as already covered by the stipulation which is marked as Plaintiff's Exhibit 414, and is entitled "General Stipulation, Set 1." Item 12 in this stipulation reads as follows:

"Sales in the United States of sodium chlorate produced outside the United States have not been sub-

stantial during the last five years. These are as follows. . ."

Then the stipulation lists the exact tonnage of imports form 1956 to 1960.

The Court: Is it your point that this testimony varies from the stipulated facts, or is your objection that the testimony is cumulative?

Mr. Freed: I object on the ground that the testimony varies. It varies first of all in the characterization of the significance or substantiality, which has already been the subject of the stipulation.

The Court: Well now, the testimony was that in 1960 [fol. 407] there was 4,000 tons imported?

Mr. Freed: That is correct.

The Court: What is the stipulation?

Mr. Freed: It reads——

Mr. Connelly: Will you read the whole stipulation, the preliminary paragraph?

The Court: I have asked the question what does the stipulation say about importation of foreign sodium chlorate in 1960.

Mr. Freed: In 1960 the tonnage given is 4,152 tons.

The Court: There is a 150 ton variance?

Mr. Freed: Yes. The variance is insignificant.

The Court: How about 1959?

Mr. Freed: 2,596.

The Court: A variance of 96 tons?

Mr. Freed: And 1,322 tons in the prior year.

The Court: A variance of 22 tons. Your objection is the small variance?

Mr. Freed: I am sure the parties will agree that the stipulation governs, but the objection does go to a change in position on the part of the defendants from a stipulation in which the parties agreed that these are not substantial in terms of the sodium chlorate market. The other defendants are putting on testimony to change their evaluation of that.

[fol. 408] The Court: Was there testimony that the importations were substantial?

Mr. Freed: That was my recollection, your Honor.

The Court: Let me say this, and I think that it can be

understood by us all, that if there is any variance between the stipulated facts and the testimony of the witness, that the trial will be controlled by the stipulated facts in the absence of some showing why the defendants should be relieved from the stipulation.

Mr. Connelly: Your Honor, this is not consequential at all, but I think part of the misapprehension comes from the fact that this stipulation is not a stipulation of agreed facts. It is a stipulation that a competent would, if called, testify to those facts. I simply wanted to bring out not by way of departure from that but simply by way of the fact of experience by Mr. Logan that he knows of the existence of imports in this market.

The Court: Mr. Freed, your point is that the stipulation says that the importations were not substantial or were substantial?

Mr. Freed: The stipulation says that the importations were not substantial.

The Court: Or does the stipulation say that if a competent witness were called he would testify that the im-[fol. 409] portations were not substantial?

Mr. Freed: The preamble, your Honor, which Mr. Connelly asked before that I read, states as follows:

> "Plaintiff and defendants hereby stipulate solely for the purpose of this case and for no other, and without waiving objections as to relevancy, that competent witnesses if called by plaintiff or defendants would testify to the following."

The Court: And that the importations were not substantial?

Mr. Freed: That is correct.

The Court: They were not substantial?

Mr. Freed: That importations were not substantial.

The Court: I don't recall any testimony that the importations were substantial, but the record will show what it shows on that.

Mr. Connelly: There is not any controversy between us concerning it, your Honor.

The Court: Is it stipulated that the importations were not substantial, Mr. Connelly?

Mr. Connelly: Yes.

[fol. 410] The Court: And that is stipulated by all defendants, Mr. Potter and Mr. De Lone?

Mr. Potter: Yes.

Mr. De Lone: Yes, your Honor.

The Court: Then your objection, I take it, is withdrawn?

Mr. Freed. Yes, your Honor.

By Mr. Connelly:

Q. Mr. Logan, during the entire period of the arrangements that you have described with Pennsalt, has there been any understanding that you are aware of, any understanding or agreement limiting or restricting the freedom of Olin to sell sodium chlorate or to manufacture sodium chlorate?

A. No, there is no agreement imposing any restrictions of that sort.

Q. Has there since the creation of Penn-Olin been any lessening of competition in the sale of sodium chlorate?

A. To us it seems as though there has been some increasing of the competition.

Q. Are there any facts known to you to suggest the likelihood of lessening competition in the foreseeable future?

A. My experience would indicate that this is going to [fol. 411] become more competitive as additional capacity comes in, as additional producers come in, and I think we are in for some competition on this product.

Mr. Connelly: You may examine.

Cross-examination.

By Mr. Freed:

Q. Mr. Logan, you testified on direct that prior to the Penn-Olin joint venture the parties contemplated the production and sale at some time of potassium chlorate and perchlorates, but some time after the joint venture agreement was entered into, the contemplation of the parties changed, is that correct?

A. I don't believe it is quite correct as you stated it.

Q. Would you correct me?

A. I think I testified that when we came to setting up the letter of intent and the original concept here, we

thought we should include things other than sodium chlorate, and when I say we thought I am speaking primarily of Olin. I don't know what Pennsalt thought about this. We thought that other chlorate and perchlorate should probably be included because perchlorate is basically made from chlorate and its inclusion would therefore make a [fol. 412] complete package.

The Court: Is the same true with reference to potassium chlorate?

The Witness: There is some relation. Potassium chlorate is in some cases made by interchange with sodium chlorate, yes.

By Mr. Freed:

Q. And potassium chlorates and perchlorates were mentioned in the letter agreement of February 11, 1960, which has previously been identified as Plaintiff's Exhibit 175, is that correct?

A. I believe this is correct.

Q. Will you tell the court when the master agreement, or, the definitive agreement which purported to replace this joint venture agreement of February 11, 1960, was executed by you?

A. The basic agreement came along in September, I think it was, of that year.

Q. Was executed in September of that year?

A. No. The agreement was pretty well decided, and I think that is one of the agreements that was executed more recently.

Q. In October of 1961?

A. I believe I am correct on that. I am not sure.

[fol. 413] Q. Mr. Logan, were you party to any conversations subsequent to the filing of this lawsuit with respect to a limitation on the scope of activities of Penn-Olin Chemical Company, conversations with your attorneys?

A. No. If I understand your question, I was not.

Q. You are not aware then of transactions which occurred in court and pursuant to conferences in court with respect to limiting the activities of Penn-Olin Chemical Company to sodium chlorate?

The Court: I am not sure that I understand the question. I want to be sure that Mr. Logan understands the question. Can you restate it a little more simply and a little more tersely, if possible?

You are asking now about Mr. Logan's knowledge of proceedings before me?

Mr. Freed: Yes, your Honor.

The Court: At which there was present counsel for Penn-Olin?

Mr. Freed: That is correct, your Honor.

The Court: And whether counsel for Penn-Olin related to Mr. Logan, or anyone else related to Mr. Logan, what transpired during those proceedings. You are asking Mr. Logan specifically about certain proceedings before me. What were those proceedings which was the subject of [fol. 414] your question?

By Mr. Freed:

Q. In February, 1961, Mr. Logan, proceedings were held in this court, in the Chambers of Judge Steel, with respect to the scope of the activities of Penn-Olin Chemical Company, and particularly with reference to the engagement by Penn-Olin in activities other than the construction of a plant for the production of sodium chlorate.

Are you aware of any conversations that took place in the confines of your company, either company personnel or company attorneys, with respect to a limitation on the activities of Penn-Olin Chemical Company following the conferences in court?

The Court: Number one, my memory is so bad and your question is so vague that I don't remember just what discussions there were before me. It may be that for effective examination you want to keep your question as broad as you stated it. If that is not necessary for your effective examination, I think it would be more meaningful if it were more specific.

Do you want a recess while you get some papers?

Mr. Freed: It will only take a moment, your Honor.

By Mr. Freed:

[fol. 415] Q. Mr. Logan, I would like to read to you from paragraph 14 of the Government's original complaint in this action filed on January 6, 1961. Paragraph 14 reads as follows:

> "On February 25, 1960, Penn-Olin Chemical Company was incorporated under the laws of the State of Delaware. Penn-Olin is authorized to engage in the production, distribution and sale of chemicals and chemical compositions of any state, form, nature, mixture or description, including sodium chlorate, potassium chlorate, and perchlorates."

There is more to the paragraph that is not pertinent to this question. At the first pretrial conference held in this case, a discussion arose among counsel and the court with respect to the furtherance by Penn-Olin of activities under that broad authorization. My question to you is whether you were party to any conversations internal to Olin or Penn-Olin Chemical Company with respect to a limitation of those activities alleged in the complaint?

Mr. Connelly: If the court please, I object to that as immaterial. I think if counsel desires to ascertain whether the exclusion of potassium chlorate and perchlorates took place prior to the filing of the complaint herein, or subsequent thereto, and perhaps because of, I have no objection to his asking that question. But as to what communications passed between counsel and client with reference to proceedings that took place here in court, I don't think that has any proper place in the examination.

[fol. 416]

The Court: I will overrule the objection.

The Witness: Mr. Freed, I have no recollection of this specific point having been discussed with me. As I think I previously testified, last year, that is, in 1960, internally in Olin we had concluded that the inclusion of perchlorate and potassium chlorate was not necessary or desirable, and therefore we had in effect eliminated these two materials prior to that time.

By Mr. Freed:

Q. And the agreement which eliminated those other chemicals is the agreement that was executed in October, 1961?

A. That's correct.

Q. Can you tell us whether prior to October, 1961, the parties had entered into any agreement, formal agreement, rescinding or modifying the argeement of February 11, 1960?

A. I know of no formal agreement to this effect.

The Court: What was the date when the suit was filed?

[fol. 417] Mr. Freed: January 6, 1961.

The Court: Is this a convenient place to take a ten-minute recess or would you like to continue your examination before we recess?

Mr. Freed: Now would be as good a time as any, your Honor.

(At this point a brief recess was taken.)

[fol. 418] OFFER IN EVIDENCE

Mr. Freed: Your Honor, with respect to the line of questioning about the revision of the original joint venture agreement, to which we were addressing ourselves prior to the recess, I would like to either offer into evidence or simply read into the record, if there is no requirement that it be offered into evidence, a provision of the Pre-Trial Order No. 1 which pertains to this point.

Is it necessary to place a pre-trial order in evidence?

The Court: If anyone wants to discuss it—how do defense counsel feel about that? Is it formally a part of the record, these pre-trial orders, unless they are actually introduced in evidence?

Mr. De Lone: I wouldn't think its status is any different from any other pleadings.

The Court: I know in Philadelphia you introduce pleadings formally, Mr. De Lone, admissions in pleadings and so on.

Mr. De Lone: Yes.

The Court: My recollection is that under the old common

law the pleadings were not part of the record. What is your view about it, Mr. Connelly?

Mr. Connelly: That would be my view, yes sir. If any portion of this is admissible in evidence it ought to be [fol. 419] offered in evidence.

The Court: Do you want to interrupt this cross examination to introduce it at this time?

Mr. Freed: I would like to, your Honor.

The Court: Do you have any objection to the cross examination being interrupted for the purpose of introducing this?

Mr. Connelly: No, sir.

The Court: Very well. Read it into the record and it will be deemed to have been introduced in evidence, without objection.

Mr. Freed: I am reading now from the pre-trial order number 1, dated February 24, 1961, to be designated as Plaintiff's Exhibit 415.

The Court: I don't know that you need even give it an exhibit number. If you read it into the record it will be deemed to be part of the record by stipulation, without objection.

Mr. Freed: That's fine, your Honor.

Paragraph 4 of the pre-trial order number 1 reads as follows:

> "Plaintiff and defendants shall explore the possibility of stipulating to a limitation upon the activities of the joint venture."

The Court: Wasn't that in connection with some talk [fol. 420] about an injunction, the issuance of an injunction?

Mr. Freed: That is correct, your Honor.

The Court: Rather than about the products to be manufactured under the agreement?

Mr. Freed: The injunction pertained to activities outside of the construction and operation of the sodium chlorate plant itself.

The Court: I don't know that that stipulation means much to me out of context.

Mr. Freed: Unfortunately, your Honor, the first pre-trial conference was the only one that was not transcribed,

and therefore the recollection of counsel and the Court is all that we have to record.

The Court: My memory is not a good memory, Mr. Freed, but to the extent that I have any it seems to me that maybe the Government did make an application for injunction to prevent certain activities, whether it was construction or whether it was sales activities or financing activities, and it was determined that in lieu of pressing the application for an injunction the parties would get together and see if they couldn't agree to restrict their activities under the joint venture agreement, the consummation of it, so to speak, in such a way that it would be satisfactory to the [fol. 421] Government and make it unnecessary to continue the motion for a preliminary injunction.

Is my memory off about that?

Mr. Freed: Your Honor's recollection is correct, but the Government did not make application to enjoin the construction or operation of the sodium chlorate plant as such.

The Court: Was there a formal application for an injunction?

Mr. Freed: There was not, your Honor.

The Court: Was there a prayer for a preliminary injunction?

Mr. Freed: There was.

The Court: What was the prayer in the complaint, because that's what brought it to the fore, it seems.

Mr. Freed: Paragraph 6 of the prayer in the original complaint read that a "preliminary injunction issue against defendants, their representatives and agents, to prevent and restrain them from proceeding jointly with the construction or operation of Penn-Olin's plant and facilities, or with the carrying out of any other provisions of their agreement, pending final adjudication of the merits of this complaint."

At the time of the first pre-trial conference the Government made the point, your Honor, that the proceeding with [fol. 422] construction by defendants should be at their own risk, otherwise there would be a need for an injunction. And your Honor stated at that time, I believe with the approval of the defendants, that of course the de-

fendants if they proceeded would proceed at their own risk with construction.

The open question that remained at the pre-trial conference related to a limitation on the other activities authorized in the letter agreement and the certificate of incorporation under which the parties were authorized to exchange information with regard to other products authorized under the agreement and under the charter, and your Honor's proposal at that time was that the parties explore the possibility of limiting the activities of the joint venture in order to avoid the need to pass on an injunction against activities apart from the construction and operation of the sodium chlorate plant.

That was done by the parties and no injunction was thereafter sought by the Government because a draft agreement similar to the one that Mr. Logan testified executing in October 1961 was presented to the Government as the manner in which the defendant proposed to limit the transaction.

The Court: Was there not some sort of report filed with me as to what was done and what conclusion had been reached? Am I right about that, Mr. Copley, that that [fol. 423] was the subject of some report or some later pre-trial order?

Mr. Copley: We have it here, your Honor.

Mr. Freed: Your Honor's recollection is better than that of counsel. Plaintiff filed a report to the Court dated March 30, 1961, entitled "Plaintiff's Report to the Court."

The Court: What does it say just about this provision that you have read into the record?

Mr. Freed: In paragraph 4 our report stated:

> "Pursuant to Paragraph 4 of the pre-trial order, the parties have explored the possibility of limiting the activities of the joint venture pendente lite. Defendants have submitted to plaintiff a proposed revision of their February 11, 1960 agreement, which when executed will limit the venture in a manner similar to that sought by stipulation."

I believe that that was the last mention of the matter of an injunction, or a limitation of activity.

The Court: I think, to have this record on the subject

complete, it should be understood that the portion of the report just read into the record should likewise constitute part of the record.

Mr. De Lone: Was not that report actually, to the extent it was read, reflected in the minutes or record of the second pre-trial conference?

Mr. Freed: It may have been.

[fol. 424] The Court: This report was filed in the court. It was a report of what was done after the first pre-trial conference.

Mr. De Lone: I didn't realize that, sir.

The Court: Very well. Proceed with the examination.

Mr. Freed: Might I ask your Honor whether the colloquy about admissibility of pleadings as part of the record applies to the complaint and answer? It was our understanding that the complaint and answer were a part of the record without being introduced.

The Court: Mr. Potter will bear me out on this. There have been cases in the Court of Chancery, I am sure, where the Court and counsel have considered admissions in the pleadings as though they were in the record even though there was no formal introduction. But I think if you are going to really be technical about it, probably you should introduce formally the pleadings which are admitted that you desire to rely on. I know that is the procedure which Mr. De Lone has operated under in Pennsylvania.

Mr. De Lone: I don't, however want to be technical, sir.

The Court: No, but the view has been expressed before, expressed by Mr. Connelly, that the defendants would prefer, so that they know what they have to meet, that [fol. 425] there be a formal offer of allegations of the complaint which are admitted by the answer which the plaintiff wishes to rely upon in support of its case.

There is no objection to the plaintiff reopening its case, is there, to supplement the record which it previously made by offering such admissions as it wishes to rely on?

Mr. De Lone: No, sir.

The Court: I don't mean at the moment to do that but at some convenient time.

Mr. Connelly: Your Honor, I did not by my remarks intend to convey the impression that I wanted to have portions of the pleadings offered in evidence. As far as we

are concerned we have assumed that the pleadings are part of the record. My remarks were made with reference to excerpts from pre-trial orders, with reference to answers to interrogatories, and that sort of thing.

STIPULATION RE PLEADINGS

The Court: All right. Then can we have it stipulated, so there is no question about it, that the pleadings in their entirety are considered to be part of the record in the case?

Mr. Freed: The Government will so stipulate, your Honor.

Mr. Potter: Defendants will so stipulate.

The Court: And I notice that Mr. Connelly and Mr. [fol. 426] De Lone nodded acquiescence.

By Mr. Freed:

Q. Mr. Logan, I believe you testified on direct examination as to purchases of sodium chlorate by Olin at Niagara Falls in 1961. Can you recall for us what the amount of those purchases was?

A. I think the question or the answer pertained to the amount purchased from Hooker, and I believe this was around 900 to 1,000 tons in the first nine months. I don't have the figures for October or November to date.

Q. The parties stipulated, in Plaintiff's Exhibit 414, Item No. 5, that Hooker Chemical Corporation sold to Olin and shipped to Olin's plant at Niagara Falls for consumption by Olin sodium chlorate in the quantities and dollar volumes indicated opposite each year, as follows; and for 1961, the six-month figure was 560 tons. It is your testimony that several hundred tons were shipped following June of 1961 but you do not recall the precise amount, is that correct?

A. That is correct. I think the third quarter figure brought the total up to slightly in excess of 900 tons.

Q. Can you tell us whether any sodium chlorate was shipped to Olin's plant at Niagara Falls prior to 1961 by any producer other than Hooker?

[fol. 427] The Court: Do you mean Niagara Falls?

Mr. Freed: At Niagara Falls.

A. We have recently, I believe, taken in some shipments from American Potash.

Q. Can you tell us where those shipments from American Potash emanated?

A. I don't know that for certain. I assume they came from——

The Court: Don't make an assumption.

Mr. Freed: To enlighten the record at this point I would like to read into the record again from Plaintiff's Exhibit 414, Item 9, the following stipulation:

"Olin bought from American Potash, and instructed American Potash to deliver from Henderson, Nevada, to Olin's plant at Niagara Falls, New York, and American Potash shipped to Niagara Falls on the dates listed below the tons of sodium chlorate set opposite each date:

"December 29, 1960—50 tons.

"February 8, 1961—150 tons."

By Mr. Freed:

Q. Are those figures correct to your knowledge, sir?

A. They are correct as far as I know, but I haven't seen those figures.

Q. You have previously testified that the purpose of [fol. 428] sales of sodium chlorate from American Potash to Olin was for the purpose of developing the sales pattern for Penn-Olin, is that correct?

A. This is essentially correct, yes, sir.

Q. Mr. Logan, I believe you testified on direct examination that Olin produces ethylene at its plant in Brandenburg, Kentucky, is that correct?

A. It does not produce ethylene for sale. It generates ethylene which it uses internally in the production of other ethylene products.

Q. Is ethylene oxide one of the products that Olin produces at Brandenburg, Kentucky?

A. Yes, sir.

Q. Mr. Logan, were you present this morning during the testimony of Mr. Osborne with respect to the reasons upon which Olin entered into the Penn-Olin venture?

A. Yes, sir.

Q. Do you recall that one of the reasons given by Mr. Osborne to justify a joint venture in the case of Penn-Olin was that Olin lacked productive experience in producing sodium chlorate?

A. Yes, sir.

Q. Mr. Logan, is Olin engaged in a joint venture for the production of ethylene oxide?

[fol. 429] A. Olin is engaged in a venture with the Sun Oil Company that is building a plant to produce ethylene, and as a derivative of that ethylene, ethylene oxide.

Q. Were these products the original products of the Sun-Olin joint venture?

A. No, sir.

Q. What was the original product of Sun-Olin?

A. The original product of Sun-Olin was urea.

Q. Was that product manufactured by either Sun or Olin prior to the joint venture?

A. No, sir.

Q. But Sun-Olin's second product, ethylene and ethylene oxide, do duplicate Olin's own production at its own plant in Kentucky, is that correct?

A. This is only a partial duplication.

Q. By "duplication" I mean same product.

A. Yes, with the exception, Mr. Freed, that Sun-Olin's primary operation in the ethylene area is the sale of ethylene as such. The production of ethylene oxide is a secondary part of the program. Olin itself does not sell any ethylene.

[fol. 430] Q. Then it is a fact that Olin has no fixed policy with respect to engaging in a joint venture on products which it already is able to produce itself. Is that correct?

A. I do not know that it has no fixed policy. These are subjected to the same analyses as any ventures we would enter into.

Q. But it has not followed that particular policy in the case of Sun Olin?

A. Which policy?

Q. A policy of refraining from interfering—from entering into a joint venture with respect to a product which it can and already does produce?

A. That is correct.

Q. Is Olin also engaged in a joint venture called "Ormet"?

Mr. Connelly: If the court please, I object to this as immaterial. I have not wanted to interrupt and place any undue limitation, but I think we can go far afield. We have a single lawsuit to try here.

The Court: What is the pertinence of this, Mr. Freed?

Mr. Freed: Your Honor, the pertinence is twofold.

The Court: As it relates to the direct examination, related to the direct examination, its pertinence to the direct [fol. 431] examination?

Mr. Freed: The direct examination of Mr. Osborne, coupled with that of Mr. Logan as relates to ventures——

The Court: Let's limit it to Mr. Osborne. He is the man you are cross-examining, or Mr. Logan.

Mr. Freed: Mr. Logan.

The Court: What is the testimony of Mr. Logan that this bears upon?

Mr. Freed: The pertinency of the Sun Olin testimony which Mr. Logan has already given goes, your Honor, to the question of the extent to which parties are in fact limited to their original product in a joint venture and as the venture itself develops.

The Court: Now, that was gone into without objection.

Mr. Freed: Correct.

The Court: We are on a different topic now, which is objected to.

Mr. Freed: I believe that the balance of the joint venture testimony which I would direct to Mr. Logan would be more pertinent to the testimony of Mr. Osborne, but it was only the combination of Mr. Osborne's testimony and Mr. Logan's with respect to a product which in fact Olin was making in Kentucky that was also the subject of a [fol. 432] joint venture that led us back into the joint venture policy as a whole.

It is not strictly pertinent solely to Mr. Logan's testimony.

The Court: If it is not pertinent to Mr. Logan's testimony I do not think we ought to cross-examine him on it. I will sustain the objection.

You are free, of course, you understand, Mr. Freed, to

call these witnesses as your own witnesses and examine them as though on cross-examination as part of your rebuttal, if that is what you want to do.

I assume Mr. Logan falls within the category of these persons that you are permitted to do that with. I am not really passing on that, but I suggest it as a possibility.

By Mr. Freed:

Q. Mr. Logan, do you recall when the certificate of incorporation of Penn-Olin Chemical Company was filed?

The Court: You mean the date, or does he remember the circumstances

Mr. Freed: The date.

The Witness: It was in February of 1960. I do not recall the exact date or the circumstances.

By Mr. Freed:

Q. To your knowledge has there been any modification [fol. 433] or withdrawing and substitution of a new certificate of incorporation?

A. Not to my knowledge.

Q. Are you familiar with the authorization given to Penn-Olin Chemical Company in its certificate of incorporation with respect to the production and sale of chemicals other than sodium chlorate?

A. I am not familiar except by hearsay.

Q. Mr. Logan, I would like to read to you from paragraph third of the certificate of incorporation of the Penn-Olin Chemical Company, which is dated February 24, 1960, and has been previously been introduced into evidence as Plaintiff's Exhibit 176.

"The nature of the business of the corporation——"

This is the Penn-Olin Chemical Company.

"—and the object or purposes to be transacted, promoted, or carried on by it are as follows: (1) To produce, manufacture, process, refine, treat, extract, store, purchase, or otherwise acquire and to sell, use, deal in, transport, distribute, market, handle, and otherwise turn to account or dispose of either in their

natural form or any altered, converted, or manufac-
[fol. 434] tured form chemicals and chemical compositions of any state, form, nature, mixture or description, including without limiting the generality of the foregoing sodium chlorate, potassium chlorates, and perchlorates, and any and all materials, mixtures, products, byproducts, articles and substances directly or indirectly related thereto in any way or of a like or similar nature, includi. all those which may be ingredients thereof or derivatives therefrom, or which may be useful in the manufacture or production thereof, or which may be advantageously manufactured or produced in connection therewith or in the manufacture, production, or use of which the same may be useful, and all other kinds of products, articles, goods, wares, and merchandise of every name and nature whether consisting in whole or in part of materials and substances similar to or different from the foregoing."

Has Olin entered into any agreement with Pennsalt rescinding, abandoning, or otherwise striking from the [fol. 435] charter this provision which I have just read?

A. No agreements so far as I know.

[fol. 436] Q. Mr. Logan, do I correctly understand your testimony on direct examination to be that in 1957 and the early part of 1958 when Pennsalt and Olin entered into an arrangement respecting sodium chlorate that there were no limitations of any kind on Olin's right to sell that sodium chlorate anyplace in the United States?

A. That is correct.

Q. I call your attention to Plaintiff's Exhibit 104, which was the letter of December 17, 1957, to which you directed yourself on direct examination. In paragraph two of this document a reference is made to the sales price to the southern mills, and the paragraph deals with the price at which sodium chlorate will be sold to the southern mills. Were there any arrangements with respect to the price to be charged to anyone else?

A. I am not aware of any arrangement regarding price other than this price here.

Q. Can you tell us who is included in the class of "southern mills"?

A. This would mean the southern paper mills, those extending across the Gulf Coast and in the southeastern portion or section of the country.

Q. I call your attention, Mr. Logan, to paragraph number four which states:

> [fol. 437] "It was agreed that you will endeavor to place our sodium chlorate to pulp mill consumers in the south on a broad basis instead of to one or two large accounts."

Was there any agreement with respect to the placing of sodium chlorate to any other class of customers apart from pulp mill consumers in the south?

A. Not so far as I know.

Q. I direct your attention, sir, to paragraph number seven of this letter which refers to Pennsalt's one account in the south, the Buckeye cellulose mill at Foley, Florida. Was that a limitation on Olin's right to sell sodium chlorate in the south?

A. I construe this to be not a limitation but merely a statement that Pennsalt would be selling direct to this account.

Q. Did Olin sell to this account after this agreement was entered into?

A. I don't believe we have sold chlorate to Buckeye yet. We might have attempted to. I am not positive.

Q. I call your attention, Mr. Logan, to the paragraph which reads:

> "Your Mr. J. L. Pickens inquired regarding the possibility of selling sodium chlorate to the uranium [fol. 438] industry in the Inter-Mountain Area, and I confirm that our conversation was related to the sale of sodium chlorate in bulk loaded into tank cars and for sale to pulp and paper mills in the southeast."

Can you tell us whether Olin in fact, following this letter, in the years 1958 or 1959 sold sodium chlorate to the uranium industry in the Inter-Mountain Area?

A. I have no knowledge of any sales to anyone in the uranium industry. Possibly we did, but I am not aware of it.

Q. Mr. Logan, did you consider this letter, Plaintiff's Exhibit 104, and in particular paragraph two to which I just directed your attention, to limit or restrict Olin in any way in its right to resell sodium chlorate secured from Pennsalt to anyone?

A. No, I do not consider it a restriction. This was a statement of the objective which was to develop the southern paper industry as an outlet for chlorate.

Q. Mr. Logan, I would like to call your attention to Plaintiff's Exhibit 109.

The Court: Do you want this before him? I suppose you are going to examine him about it.

The Witness: Thank you, sir.

By Mr. Freed:

[fol. 439] Q. Plaintiff's Exhibit 109 is a letter from you, Mr. Logan, to Mr. F. C. Shanaman dated January 14, 1958, which reads in part as follows:

> "Since undertaking our work on chlorate sales our people have raised the question of chlorate usage by the railroads as a right-of-way weed killing agent. We do have some opportunity to move chlorate for weed-killing applications, but are not sure this was included in the intent of our arrangement with you."

Do you recall writing this letter?

A. Yes.

Q. Can you tell us whether Olin in fact after this letter in the years 1958 or 1959 sold sodium chlorate to railroads as a right-of-way weed killing agent?

A. I don't believe we have yet sold chlorate for weed killing purposes. We have had some discussions with people in this business about chlorate.

Q. Do you recall receiving a response to the letter which has been identified as Plaintiff's Exhibit 109?

A. I think there was a response from Mr. Shanaman.

Q. Plaintiff's Exhibit 110, a letter dated January 16,

1958, addressed to Mr. J. O. Logan, and signed Fred Shanaman, and reads as follows:

> [fol. 440] "I am hurriedly acknowledging your letter of January 14 concerning sodium chlorate. We have a contract with Chipman Chemical Company which covers our sales of sodium chlorate for railroad weed killing purposes; under the circumstances same had been excluded from earlier discussions and I will elaborate thereupon when I see you later this month."

Do you recall receiving that letter?

A. Yes.

Q. Do you recall, Mr. Logan, whether Olin salesmen were given any instructions with respect to the manner or place or customers to whom sodium chlorate received from Pennsalt would be marketed?

A. The only instructions they received, to the best of my knowledge, is that they were watched or they were directed to contact the paper mills and their efforts in this connection were very carefully watched to make certain that this coverage was effective and complete.

Q. To your knowledge, Mr. Logan, did Olin make any sales in the years 1958 or 1959 to anyone other than a pulp and paper company?

A. I don't know of any such sales. I am excluding from that answer the small quantity that our agricultural people might have sold in the southwest in formulated form. [fol. 441] I do not know where that went.

Q. Is Olin engaged in the marketing of sodium chlorate for agricultural purposes in the south?

A. No. I think it was brought out earlier that our agricultural division operates out of Phoenix and had obtained small quantities of packaged sodium chlorate. I do not know where that went.

Q. How long has Olin been in that business?

A. What business? The agricultural business?

Q. The agricultural sales of sodium chlorate.

A. I can't answer how long we have sold sodium chlorate in—It is a very minor segment of the business. The company has been in the agricultural business for some years.

Q. Is that the herbicide business?

A. I assume this is what it was used for. I do not know.

Q. You have no recollection of whether there were any such sales?

A. I have no knowledge of that at all.

Q. There were, to your knowledge, no weed killing sales of sodium chlorate in this period?

A. That is correct.

Q. And no uranium milling sales?

[fol. 442] A. That is correct.

Q. No sales outside the pulp and paper industry?

A. As far as I know that is correct.

Q. No sales outside of the south?

A. I think I will need a definition of the south. I don't know exactly where all of these sales went.

Q. I would like to read to you, sir, from Table Number 4 refered to in Stipulation Number 4 in Plaintiff's Exhibit 414, which is the compilation that has previously been referred to as General Stipulation, Set 1. Item 4 of this exhibit reads as follows:

> "Shipments of sodium chlorate by Pennsalt in years prior to 1958 and in the years 1958-60 on behalf of Olin are as set forth in attached stipulation Table 4."

Table 4 shows that in the year 1958 Olin sales of sodium chlorate went to the following states: Alabama, Arkansas, Georgia, Virginia.

Are all of those states in the south?

A. I would so classify them, yes.

Q. In the year 1959 Olin's sales went to the following states: Alabama, Georgia, North Carolina, and something called agricultural sales.

Do you know whether that agricultural chemical sales is purchased by your Phoenix plant?

[fol. 443] A. I assume that is what it refers to, yes.

Q. To your knowledge there were no sales outside of the south other than to and through Olin—other than to Olin's plant for consumption at Phoenix?

A. I believe this is essentially correct, yes.

Mr. Freed: Your Honor, I wonder at this time if we might recess for the day, and my request is based on two reasons. The first is that under the order of the Court at the conclusion of the plaintiff's case a week ago yesterday, the Court required the defendants to designate by this past Monday the documents that they would introduce into evidence. The defendants have so designated their documents but have not as of the moment placed them into evidence in the manner which the plaintiff did prior to its own case, and I believe that before the witness of the importance of Mr. Logan departs that we should have an opportunity to examine those documents that defendants actually places into evidence so that we will know whether any of them represent or relate to his direct examination and be able to deal with them here rather than on the rebuttal case.

Mr. Connelly: I am frankly puzzled by Mr. Freed's statement.

The Court: This is an application to recess until tomorrow morning. It is now 4:25.

[fol. 444] Mr. Connelly: I have no objection to the application for a recess.

The Court: You want something overnight from the defendants, is that it, Mr. Freed?

Mr. Freed: I believe that the procedure which was followed with reference to the plaintiff's case——

The Court: What is it you want overnight, a designation by defendants of the documents they are later going to offer in evidence?

Mr. Freed: That is correct, and perhaps at a session in the morning——

The Court: You haven't had that yet?

Mr. Freed: We have not had that yet. The documents have been listed to us in a letter, but there has been no offering into evidence.

The Court: Let the record record Mr. Connelly's perplexion.

Mr. Connelly: Consternation and perplexion.

Mr. De Lone: Mine, too, please, sir.

The Court: You are always such a jovial man back there, you never seem perplexed.

Mr. Connelly: Your Honor, you will recall in connection with the discussion last week the request made that there be a designation, an advance notice to counsel for the [fol. 445] — of whatever documents the defendants had any intention of offering into evidence in their case. That designation has in fact been given to counsel for the plaintiff. He has it. He has copies of any documents that were not previously furnished to him.

So far as our use of documents is concerned we do not intend to offer in evidence any documents—do not as of now intend to offer in evidence any document which he has not been apprised of. Whether those will be offered in evidence will depend upon what happens in the course of this case.

The Court: I should think would it not be the fact that Mr. Freed would be permitted to cross examine this witness on any documents which you have designated or any documents which you have not designated so long as it is proper cross examination?

Mr. Connelly: Of course.

Mr. Freed: Our difficulty, Your Honor, is that it was our understanding that the documents which would constitute part of the defendants' case would, as in the same manner as was required of plaintiff, be offered into evidence at the beginning of the defendants' case.

The Court: Was there anything in the record that substantiates that?

[fol. 446] Mr. Freed: I don't believe this matter was discussed at any length, Your Honor. This was an assumption that was based on the procedure that had been applicable to the government. I don't beleive there has been an order.

The Court: I have seen cases tried where parties introduce documents in advance, and I have seen them where they introduce them at the end of the case, and I have seen it where they introduce them during the examination of witnesses.

I think that if you know the outermost limits of the documentary evidence which the defendants propose to offer that you have enough information at your disposal

for cross examination on the basis of those documents or any other documents which are proper.

So we will recess until 10:00 tomorrow morning.

Mr. Freed: Your Honor asked of government counsel this morning to bring up again this evening the question of the time which we should schedule our rebuttal witnesses. We have been advised the Court has been advised this morning that Pennsalt's two witnesses would not be available until next Monday, and Mr. De Lone advised me earlier today that the only other witness who will be called will not be available until tomorrow afternoon and——

The Court: You have some more cross examination?

Mr. Freed: We have more cross examination of Mr. [fol. 447] Logan, that is correct. Then I assume we will proceed with Mr. Bingham of the Pittsburgh Plate Glass, then I assume we will have to recess until next week for the Pennsalt witnesses, and the question is when——

The Court: Won't you counsel get together after I leave the bench and see whether you can agree when your rebuttal witnesses should be here, and unless there is something highly unreasonable about it I will try and accommodate my time for your mutual convenience.

(At this time the trial was adjourned until Thursday, November 16, 1961, at 10:00 a.m.)

[fol. 448] Thursday November 16, 1961, 10:00 o'clock a. m.

PRESENT:

As before noted.

Mr. Freed: Before we commence today I would like to make a statement about the question of relief in this case.

Prior to trial the attorneys for all parties agreed among themselves that there was no purpose to be served by putting on evidence with respect to possible relief in this case, that that should be a matter which we would recommend to the court, and should be deferred until such time after trial as it might be appropriate.

We agreed, however, this was a matter which was subject to a ruling of the court with respect to procedure, and

it was through my own oversight that this was not brought to your attention before.

The Court: I suppose, then, it is the understanding of all parties, subject to my approval, that my initial decision after having heard the evidence and read the briefs, and so on, will be either to the effect that the plaintiff is entitled to some relief, the precise nature of which will be later de-
[fol. 449] termined on subsequent evidence, such subsequent evidence as the parties wish to introduce, or the plaintiff is entitled to no relief and the action should be dismissed.

Mr. Freed: That is our understanding.

The Court: Is that the understanding of the defendants?

Mr. De Lone: Yes.

Mr. Connelly: Yes.

The Court: Mr. Phillips?

Mr. Phillips: That is correct.

The Court: That is satisfactory to the court.

JOHN O. LOGAN (resumed)

Cross-examination (Continued)

By Mr. Freed:

Q. Mr. Logan, I believe you testified yesterday that Olin and its predecessor Mathieson Chemical Corporation had been interested for many years in the possibility of producing sodium chlorate. Is that correct?

A. This is generally correct, yes.

Q. Do you recall the market research report which Olin had made in 1956 with reference to sodium chlorate?

A. I do not recall that one specifically. There were sev-
[fol. 450] eral over the years, and this particular one I do not recognize individually.

Q. The plaintiff has previously introduced in evidence as Plaintiff's Exhibit 10 a document entitled, "Market Research Report, Sodium Chlorate, December, 1956," the author's name appears on the front page as John J. Hayes.

I show you a copy of this report, Mr. Logan, and ask you

if you can now recall the circumstances under which this particular report was prepared?

A. Mr. Freed, to the best of my recollection this report, as were others of a somewhat similar nature, was prepared as a part of our general market research activity, and in some cases these reports were initiated by the market research people, amongst whom Mr. Hayes was one, and in some cases they were initiated by a specific request on the part of some member of management. I do not recall in which category this particular report rests.

Q. What was Mr. Hayes' position with Olin at the time of this report?

A. Mr. Hayes was a member of the market research organization. I do not know that he had a specific title. He was a market research man for us.

Q. Your testimony is you do not recall specifically which individual in the corporation asked him to prepare this [fol. 451] report?

A. That is correct.

Q. Do you recall, Mr. Logan, whether there was a prior market research report on sodium chlorate prepared by Mr. Hayes, a number of years earlier?

A. I don't recall any such report. There were other reports. I don't recall any that Mr. Hayes himself prepared. He might have.

Q. Can you tell us what market research reports prior to this particular one you can recall?

A. There were reports going back into the period of the mid 1930's, made by different individuals at that time. Some of these were formal reports following the pattern of this particular one. Some of them were in the nature of a memorandum that covered the subject in less detailed fashion. I don't recall that Mr. Hayes himself made any prior reports, but I know that there were reports over a period of some years prepared by various individuals.

By the Court:

Q. Are you speaking of reports generally or are you speaking about reports with reference to sodium chlorate?

A. Reports with respect to the market on sodium chlorate.

By Mr. Freed:

[fol. 452] Q. Then Mr. Hayes' 1956 report, which is Plaintiff's Exhibit 10, is simply the most recent, up-to-date report as of that date on Olin's study of the sodium chlorate market, is that correct?

A. It probably is the most recent complete report. There were other briefer and more quickly prepared reports during the period we were making sales of chlorate and up until more recent times.

Q. Then this particular exhibit is simply evidence of Olin's continuing interest through the period of the '50's in the market for sodium chlorate?

A. I would think so, yes, sir.

By the Court:

Q. My memory is a little bit bad. You said you had reports made during the period when you sold sodium chlorate. I had the impression that you hadn't sold any sodium chlorate before 1956.

A. That's correct, the period of sales was after 1956.

Q. So to that extent your earlier testimony in which sales might be inferred prior to 1956 was inaccurate?

A. That's right. There was a continuing pattern of reports both prior to the sales period and during the sales period.

By Mr. Freed:

[fol. 453] Q. Mr. Logan, do you recall yesterday making the statement, with reference to a question from Mr. Connelly dealing with the April, 1959 Whither Report, that the corporate staff didn't feel that this particular project, namely, the sodium chlorate plant at McIntosh, showed any merit worthy of serious consideration by the corporation at that time?

A. Yes, sir.

Q. By that statement you did not mean to convey, did you, any different conclusion by the corporate staff other than that which was stated in Plaintiff's Exhibit 34? I refer you in connection with your answer to the second page under the letter F of this exhibit. That is the conclusion of the corporate staff to which you were referring, is that correct?

A. That is correct. This is a specific statement of position which they discussed with us, but I am talking about the same general conclusion, yes.

Q. And the conclusion that is stated in Plaintiff's Exhibit 34 with respect to the reaction of corporate staff is correct in this exhibit?

A. I would say this is correct.

Q. Then the fact is, sir, that following submission of the April, 1959, Whither Report, and its consideration by [fol. 454] the corporate staff, your division undertook further studies along the lines outlined in Plaintiff's Exhibit 34, in further consideration of a sodium chlorate project, is that correct?

A. That is correct.

Q. Can you tell us, Mr. Logan, whether the consideration which was given in April, 1959, to an Olin sodium chlorate plant at McIntosh was consideration which was aimed exclusively at an independent competitive facility for Olin by itself?

A. This was not exclusively aimed in this direction although we considered that if we put any plant at McIntosh, or if a plant were put in at McIntosh, it was possible that it would be an independent venture. There was some consideration of this location along with several other of our plant sites, but there was no conclusion at this stage as to whether this would have been an independent venture or handled in some other fashion.

By the Court:

Q. Was that area of the subject given any consideration at all?

A. The area of it being an independent venture?

Q. Yes, as distinguished from a joint venture.

A. Yes, this was an alternate that was definitely in [fol. 455] our consideration.

Q. But there was no conclusion arrived at?

A. There was no conclusion arrived at.

By Mr. Freed:

Q. Prior to considering McIntosh, had Olin considered a number of other locations for a sodium chlorate plant?

A. We had, and I don't know whether it was prior or

concurrent with the consideration of McIntosh, but we had considered the possibility of Brunswick, Georgia and also at Lake Charles. We had actually also thought of the possibility of Saltville, Virginia, but several of these were disposed of rather quickly.

Q. The possibility of a plant at Brunswick, Georgia, was rejected on grounds of economics?

A. Primarily, yes. Secondarily because it was not too well located with respect to the market. It was on the coast and hence geographically the coast eliminated a great portion of your market.

Q. Then both the location of Brunswick and the power cost were the factors instrumental in causing its rejection?

A. That's correct, plus the fact that we had no substantial operation at Brunswick to which this could be tied. It was only a very limited operation at that location.

Q. Do you recall the time that Brunswick was rejected [fol. 456] as a possible location communicating that fact to Mr. Drake the President of Pennsalt?

A. I communicated to Mr. Drake the fact that we had checked into the power and certain situations at Brunswick and that this did not appear attractive.

Q. Do you recall advising Mr. Drake of your consideration of McIntosh as the site of either a joint plant or an independent sodium chlorate plant?

A. I believe I stated to Mr. Drake that at the time we considered the power cost at Brunswick we were also looking at other locations, but I do not recall that I specifically mentioned Brunswick or McIntosh to him.

Q. I would like to show you, Mr. Logan, Plaintiff's Exhibit 160, which is a letter dated February 27, 1959, from you to Mr. Drake, and ask you whether that is the letter which you were referring to in your testimony regarding the advice or your advice on Olin's findings with reference to Brunswick, Georgia, at the site of a sodium chlorate plant?

A. Yes.

Q. And to refresh your recollection with reference to the McIntosh site I would like to show you Plaintiff's Exhibit 163. This exhibit is a letter dated April 7, 1959, from you to Mr. Drake and reads as follows:

"Dear Bill, thank you for your note of April 3. [fol. 457] We have reviewed power and salt cost factors at other locations and have come to the conclusion that McIntosh or Lake Charles would be better than the East Coast point due to lower power and the availability of our own salt. The results for McIntosh location are reasonably encouraging. I would hope to have some ideas to discuss with you in another 30 days."

Does that refresh your recollection about advising Mr. Drake?

A. Yes. I apparently specifically referred to McIntosh to him.

Q. You recall, Mr. Logan, do you not, that the Whither Report of April of 1959 was dated April 10, 1959, and therefore your advice to Mr. Drake respecting McIntosh was given approximately contemporaneous with the consideration by Olin of locating a sodium chlorate plant at McIntosh either independently as a competitor or as a possible joint venture. Is that correct?

A. Correct.

The Court: That question simply asks for the witness to restate what the documents show on their face concerning dates, the letter being April 7 date, and the other report being an April 10th date.

[fol. 458] You did not have any other implications to be drawn from that question beyond that?

Mr. Freed: I do not believe there was anything new in the question, your Honor.

Will the reporter read the question?

(The reporter read the last question as follows:)

"Q. You recall, Mr. Logan, do you not, that the Whither Report of April of 1959 was dated April 10, 1959, and therefore your advice to Mr. Drake respecting McIntosh was given approximately contemporaneous with the consideration by Olin of locating a sodium chlorate plant at McIntosh either independently as a competitor or as a possible joint venture. Is that correct?"

Mr. Freed: I want to be sure there wasn't an element in the question——

The Court: I thought you were merely saying, "You wrote the letter of April 7, 1959, to Mr. Drake about the same time that the Whither Report came out," and that is what you meant to have the witness say, "Yes, they were written about the same time."

Mr. Freed: That is correct. The significance of the timing of the letters is brought out by the question in that, as I understand Mr. Logan's testimony, this location was being considered by Olin either as the site of an indepen-
[fol 459] dent competitive facility or as a possible joint venture.

Mr. Connelly: I do not understand what counsel means by "an independent competitor." An independent facility is what I understood your question——

Mr. Freed: Independent by Olin alone.

Mr. Connelly: Yes.

By Mr. Freed:

Q. Do you recall, Mr. Logan, having any further discussions with Mr. Drake following the April 1959 Whither Report on the subject of a possible joint venture?

A. I do not recall any discussions at that time of any consequence certainly. Obviously the discussion came up later regarding the joint venture.

Q. Mr. Logan, Plaintiff's Exhibit 168 is the extract from minutes of a division management meeting held by Olin's Chemical Division on June 8, 1959. It reads as follows under the heading of, "Chlorate Facilities."

> "Subject facility will be discussed this week. It may be either on a joint venture or independent basis. The feeling exists that there is a market to justify such a facility. Mr. Logan will discuss our interest in the joint venture (Pennsalt) this week."

[fol. 460]. Does that minute refresh your recollection with respect to conversations in the middle of 1959?

A. It does not refresh my memory sufficiently to say that I discussed this with Pennsalt or with my own management. I do not know which this means with reference to further discussion.

Q. In all events your continuing to advise Mr. Drake of Olin's plans or its consideration of a sodium chlorate facility was pursuant to the understanding and agreement that you reached with Pennsalt back in February, 1958. Is that correct?

A. That is correct.

Q. Mr. Logan, yesterday in response to direct examination you identified Dr. Wojcik as having previously been Director of Research for the Chemicals Division, but after that time becoming Scientific Advisor to Mr. Block.

Just to clarify the record can you recall when Dr. Wojcik changed positions from Director of Research and Development, Industrial Chemicals, to another position in the Chemical Division?

A. Dr. Wojcik had been the Director of Research and Development for the Industrial Chemicals segment of what was later the total Chemical Division. When the other activities were brought together under Mr. Block's man-
[fol. 461] agership into the Chemicals Division there were several research activities and at this time or at this stage there was really no Director of Research and Development because Dr. Wojcik had only been responsible for a segment of the organization's research activities.

Mr. Block in essence assumed the position of Director of Research for the division, and Dr. Wojcik became more or less automatically an advisor to him on certain research and scientific areas, but I do not believe there was any formal transition of title from Director of Research to some other position.

Q. The time period to which you are referring is what?

A. This did not happen abruptly, it took place over the period of 1958, 1959, and into 1960.

Q. I direct your attention, Mr. Logan, simply to clarify the record on Dr. Wojcik, to Plaintiff's Exhibit 374, which is an organizational chart dated September 22, 1959 and which lists Dr. Wojcik as of that date, the date of his release, as Director of Research and Development for Industrial Chemicals. Is this organizational chart correct?

A. I think this is correct as an organizational chart. As a matter of practice, Mr. Block's procedure was not to follow strictly organizational charts, and as a matter of practice, therefore, this was not necessarily what was tak-

[fol. 462] ing place in the organization. But organizationally this was a correct chart, yes.

Q. In other words, in his capacity or formal title of Director of Research and Development, Dr. Wojcik was also answerable directly to Mr. Block and was serving as Mr. Block's scientific adviser for a wider range of activities of the Chemicals Division, is that your testimony?

A. And simultaneously Mr. Block was also proceeding with some active direction of the Industrial Chemical Research activity.

The Court: Mr. Block or Dr. Wojcik?

The Witness: Block was. What I am saying is that this is an organizational chart issued by the personnel people, but in practice this was not strictly adhered to in both directions. Dr. Wojcik's activity at Mr. Block's will extended beyond the Industrial Chemicals area, and Mr. Block at his will undertook activity in the area which the chart shows was the responsibility of Dr. Wojcik.

By Mr. Freed:

Q. Mr. Logan, you were asked on direct examination yesterday whether in the course of the negotiations prior to the February 11, 1960, joint venture agreement, the following question. This is at page 393 of the transcript:

"Question: Was there anything said on the sub-
[fol. 463] ject of the plant location, or proposed plant location?

"Answer: I think the Pennsalt people proposed Calvert City."

Was there anything else said about possible locations during the course of the Penn-Olin negotiations?

A. Yes, I think that alternate locations were discussed.

Q. Will you tell the court what those alternate locations were?

A. These alternate locations are the same ones that we had been investigating over a period of some time, and I think that at this stage the alternate locations had been pretty well eliminated by our own analysis, but obviously when Pennsalt would suggest Calvert City we would con-

sider with them and discuss whether or not this was the best location amongst all those that were available.

I don't think there was any extensive discussion on alternate locations because they had been pretty well eliminated by the prior studies.

Q. You do not recall then that there was a specific alternative to Calvert City considered just prior to the joint venture agreement of February 11, 1960?

A. Considered by us jointly with Pennsalt, or considered [fol. 464] by us independently?

Q. Considered in the course of the Penn-Olin negotiations by both companies.

A. We had considered several locations, Mr. Freed, as evidenced here.

Q. My question is whether there was a specific location, either in terms of city or geographic area, that was considered.

The Court: You mean talked about between representatives of Pennsalt and representatives of Olin?

Mr. Freed: That's correct, your Honor.

Mr. Connelly: This is addressed to a few days prior to February 11th?

The Court: It is in the period of negotiations. Whether it is a day or two or a little more remote than that, the question covered whatever period the negotiations covered.

Mr. Connelly: The only thing, your Honor, there has been testimony by the witness of negotiations extending over a rather considerable period of time. The question that was asked on direct examination, to which Mr. Freed referred a moment ago, related specifically to the meeting shortly prior to January 22, 1960. I am simply inquiring as to whether the present question is limited to that meeting or whether he wants to review again all of the [fol. 465] considerations of plant locations at earlier dates.

By Mr. Freed:

Q. My question, Mr. Logan, is limited to the year 1960, and particularly the months of January and February, in which according to your testimony yesterday representatives of the two companies met and negotiated and finalized the joint venture agreement.

The Court: Finalized the letter of intent.

Mr. Freed: The letter of intent, yes, sir.

The Witness: Mr. Freed, I think, and this is my recollection, that when we got to the point of discussing a specific venture, the point of Calvert City was brought up, and to us this was a logical location because it answered some of the questions that we had been unable to resolve in any of the locations available to us, and we probably discussed alternates.

The Court: I think you ought not to speculate as to whether or not you did. If you recall that you did, say so.

The Witness: I have no recollection of us specifically discussing alternate locations at that time, most of these having already been discussed with Pennsalt and having been eliminated for one reason or another.

By Mr. Freed:

[fol. 966] Q. Mr. Logan, do you recall testifying on deposition in this case, on June 1, 1961, here in Wilmington?

A. Yes, I was here.

Q. I would like to read to you from the transcript of that deposition and ask you whether the testimony which you gave in June refreshes your recollection with respect to alternative locations considered prior to February 11, 1960. This is from page 191 of Plaintiff's Exhibit 408, the deposition of John O. Logan:

"Question: At the time the Penn-Olin venture was discussed in late 1959 and early 1960, was Olin contemplating the construction of new facilities at Chattanooga?

"Answer: I don't think it was contemplating then. It was giving some mental consideration to the possibilities.

"Question: And did anything come of those discussions or possibilities?

"Answer: We ultimately decided to locate a facility at Charleston, Tennessee.

"Question: Is Charleston located close to Chattanooga?

"Answer: It is approximately 50 miles from Chattanooga.

[fol. 467] "Question: And what facilities did you decide to locate at Charleston?

"Answer: We are in the process of building a chlorine caustic soda plant there.

"Question: Did you at any time during the Penn-Olin negotiations consider building a sodium chlorate plant at Charleston, Tennessee?

"Answer: When we originally conceived the idea of having a plant at Chattanooga or at Charleston, I believe some studies of the freight structure were made from that location to the chlorate consumers versus from Calvert City to the chlorate consumers."

Does that excerpt from your deposition refresh your recollection as to the specific other location or locations that were considered in the course of the Penn-Olin negotiations?

Mr. Connelly: If the court please, I object to that question. That is not the question that was put to him before, which was discussion of that subject of plant locations at a meeting with Pennsalt shortly prior to January 22, 1960.

The Court: I think it was a little broader than that. It included January and February, 1960.

[fol. 468] Mr. Connelly: I'm sorry, I didn't mean to limit it to just prior to January 22. The point is discussions with Pennsalt as opposed to the consideration by Olin, which is referred to in the testimony just read.

The Court: The question is whether or not the testimony refreshes the witness' recollection as to whether or not he had discussions of alternatives during the period of January and February, 1960, with Pennsalt.

Mr. Connelly: I withdraw the objection.

The Witness: Mr. Freed, it is my recollection that prior to the time of the discussions which led to the letter of intent, namely, the discussions in late January and early February, that there was no reference by us to Chattanooga. Following the letter of intent and the discussion of the joint venture, we did make studies of Chattanooga as a possible location in comparison to Calvert City, which had been suggested by Pennsalt, and Pennsalt was informed of some of these results and was aware of them.

By Mr. Freed:

Q. Do you recall, Mr. Logan, attending a Penn-Olin negotiation session prior to the letter of intent of February 11, 1960, on February 4, 1960 in Philadelphia? Do you recall that such a meeting took place?

The Court: A Penn-Olin session?

[fol. 469] Mr. Freed: A negotiation session between Pennsalt and Penn-Olin with respect to the possible creation of Penn-Olin.

Mr. Connelly: I take it counsel means between Pennsalt and Olin?

Mr. Freed: That's correct, sir.

The Witness: There was a session in Philadelphia. My recollection as to the exact date is poor. It might have been on February 4th, it might have been later, I am not sure, Mr. Freed.

By Mr. Freed:

Q. I would like to show you, Mr. Logan, Plaintiff's Exhibit 194, which are handwritten notes dated 2-4-60, and bear in the Olin stamp box the name "Logan." I address your attention particularly to the second page of those handwritten notes and ask you whether they are your own notes taken at a meeting on February 4, 1960, and refresh your recollection of any discussions between Pennsalt and Olin with regard to an alternative location for that facility?

A. Yes, I am well aware of that, and these are my notes. I do not recollect the exact date of the meeting.

The Court: The notes bear notation on the first page, 2-4-60?

The Witness: That is correct.

[fol. 470] The Court: That is the date when the notes were made?

The Witness: That is correct.

By Mr. Freed:

Q. And those notes were made at a meeting of Pennsalt and Olin personnel, is that correct?

A. They were either made at the meeting or they were made by me immediately subsequent to the meeting.

Q. Were the locations of Calvert City and Chattanooga discussed in the course of that meeting as alternative locations?

A. Yes. I think this is the meeting at which we decided to check out the freight rates and the distribution pattern from both points to determine the economics in terms of transportation problems.

Q. Can you tell us, Mr. Logan, when it was that Chattanooga was rejected as a possible site for a sodium chlorate plant?

A. I think it wasn't quite a case of rejecting Chattanooga. It was a case that there was no specific location at that time which we could use, or which could be used to put a chlorate plant on. The use of Chattanooga was designed to cover an area, as opposed to being specifically Chattanooga or ten miles upstream or downstream.

[fol. 471] As I recall, there was not at this time any specific location in the Chattanooga area where we could have put a facility. So this was not so much a case of rejecting it as a case of trying to evaluate whether we should pursue the matter of developing a site in Chattanooga and what to do about it.

Calvert City was a going location, and as shown on page 2 of these notes, it was agreed by the parties in conference that it would take slightly longer to install the facility at Chattanooga, if we had a specific site on which to do it than it would to do it at Calvert City. This was because Calvert City was a fully developed facility, had a labor force, and had technicians available to put the plant in.

It is a case of checking out the last possibility that there was a location that would prove out to be better than Calvert City, rather than an outright rejection of Chattanooga location.

Q. When you refer to Chattanooga you are referring to that as a sample location in the Tennessee Valley Authority area. Is that correct?

A. That is correct.

Q. And Charleston, Tennessee, is in that area?

A. Charleston, Tennessee, is in that area, and Charleston [fol. 472] later became the specific location that we would have used instead of Chattanooga. If Charleston had been in existence at the time of this meeting the notes would

have referred to a comparison between Calvert City and Charleston and we would have handled freight rates from Charleston. Not having Charleston at that stage Chattanooga was used as a general area point.

Q. Following the Penn-Olin letter of intent did Olin in fact locate an electrolytic facility at Charleston, Tennessee?

A. Yes. Subsequent thereto we did and we are building a facility there at this time.

Q. Is there a sodium chlorate plant being constructed there by Olin?

A. There is not.

By the Court:

Q. Was it the type of electrochemical facility to which it would have been practical to have made sodium chlorate production an adjunct?

A. Ultimately it would have been practical, yes.

Q. What is the significance of your qualification "ulti-
[fol. 473] mately?"

A. Only that to the extent that time was a factor in getting into production it was possible to proceed immediately at Calvert City upon any day of decision, and Charleston was not at this stage even a selected site and did not have the electrolytic facility to which the chlorate plant could have been added.

By Mr. Freed:

Q. Mr. Logan, you testified yesterday that the joint venture negotiations of 1960 were triggered by an approach that Mr. Fred Shanaman made to you. Can you isolate for us, to the best of your ability, the date on which Mr. Shanaman contacted you?

A. I am afraid I cannot, Mr. Freed. These contacts sometimes were made over the phone on a rather casual basis depending on where we caught each other, and also at this time Pennsalt being in an organizational transition they were introducing new faces into the picture and Mr. Shanaman was approaching ultimate retirement so that more or less simultaneously I was hearing from Mr. Shanaman and also Mr. Drake, and I am not sure at what time

Mr. Shanaman contacted me and at what time Mr. Drake contacted me. The exact dates I do not recollect.

Q. Do you recall, though, that the dates were in the [fol. 474] months of December, 1959, or January, 1960?

A. Yes, I think they were within this period.

Q. Do you remember what the status of Olin's sodium chlorate production activities or consideration of activities was immediately prior to Mr. Shanaman's calling you or getting in touch with you at the end of 1959?

A. I think the status at that time was that we had added to our technical knowledge in the sense that we were informed as to what others could make available to us in the way of technical information. We had evaluated additional locations. We had kept up to date our study of the market, and I think as of that time we were much better informed on all phases of this subject than we had been previously.

As far as coming to any conclusion, we were no further advanced than we were when we made the recommendation about McIntosh that was turned down.

Q. Was the question of an independent venture or joint venture still an open question?

A. It was still an open question. I think we were aiming, certainly I was aiming in my own effort in this connection, at developing a facility that was most sound from both a technical and an economic standpoint, and as far as I was concerned this was the major objective.

Q. Your activities in this respect were aimed at both al- [fol. 475] ternatives, or at one more than the other?

A. Aimed at selecting one of the alternatives which would prove to be best from those standpoints, technical and economic and marketing soundness.

Q. And these factors were being considered by you in connection with either a joint venture or an independent venture?

A. They were being considered in this light by me, yes.

Q. I would like to show you, Mr. Logan, a copy of Plaintiff's Exhibit 358, which is a memorandum dated November 18, 1959, from you to Mr. J. G. Johns. Would you tell the court who Mr. Johns was at that time?

A. Mr. Johns was one of our sales managers who was more directly concerned with the sales of chlorate.

Q. Directing your attention to the last paragraph of Exhibit 358, will you tell the court the circumstances which led to your statement that:

> "Since in all probability we will not proceed with a joint production facility we should not overcontract until at least until there is further clarification following my meeting with Shanaman."

Can you tell us what was responsible for this estimation [fol. 476] on your part of probability that Olin would not proceed with a joint production facility?

A. I think this was the result of our continuing examination of this problem, and as we acquired additional knowledge and information we obviously weighed more seriously the alternates. I think at this time there was some consideration on our part, and some of our people probably felt that we——

By the Court:

Q. You are supposing?

A. I will correct the statement "suppose." I will make this as a statement.

At this time there were some people in our organization who were still pressing that matter of us proceeding independently, feeling that our knowledge and our ability was growing all the time. My feeling was that while we were approaching this point and that therefore we wanted to be careful in our contractual position for the future, we had not yet reached the stage where we could draw that conclusion that we should proceed independently.

By Mr. Freed:

Q. At this particular time the alternative of proceeding with an independent facility rather than a joint facility was only a probability, but was not a firm conclusion?

[fol. 477] A. I think that is correct, Mr. Freed.

By the Court:

Q. It looked to you like a more likely ultimate course of procedure than the joint venture route?

A. It looked as though it was definitely more of a possibility than it had been previously, certainly.

By Mr. Freed:

Q. But more than that it was a more likely possibility than the joint venture at the time of this memorandum. Is that correct?

A. I would draw that conclusion from this statement here. I do not recall the specific facts that prompted this memo.

By the Court:

Q. I should suppose from the statement, and you correct me if I am misjudging your decisional mood, so to speak, that if in all probability you were not going to proceed with the joint production facility you were at the point where you would not proceed with any production facility, or you would proceed with an independent facility?

A. That is correct. I do not recollect at the moment what is behind the use of the term "probability" here. It could have been simply that——

[fol. 478] Q. Do not speculate. You said you do not know —Well, you may explain it if you wish, unless Mr. Freed has some objection.

He says he doesn't know what was behind it, but he was going to suggest an alternative possibility. Do you want that sort of explanation or not, Mr. Freed?

Mr. Freed: If your Honor feels it would be helpful we will be happy to have the witness, who was the man in charge at this time——

The Court: On the face of it it seems to reflect the judgment of the unlikelihood of a joint venture.

The Witness: This might have simply meant also that our own management people, and understand that our corporate people as represented by Mr. Osborne and the staff

still were not sold on this particular product as something that we should get involved in.

My statement here regarding probability may have been based on the fact that we probably were not going to do anything on chlorate. I do not recollect the exact circumstances which prompted this particular memo.

By Mr. Freed:

Q. In other words, it is possible though you do not recollect this was the fact that Olin might have considered at this time abandoning sodium chlorate altogether?

[fol. 479] A. That is correct. Yes.

By the Court:

Q. Of course it is a fact that this expression was called for or was brought forth by you, was it not, Mr. Logan, in the light of a decision which you had to make as to your quantitative contractual commitments?

A. That is correct. This might have indicated in our minds that we were going to wash out the whole chlorate program and therefore don't go too far.

By Mr. Freed:

Q. Now that speculation of various possibilities has been placed on the record, the likelihood in terms of Olin's increasing technical knowledge and interest in the field was that at that particular point Olin was more interested in proceeding with an independent facility than it was with proceeding with a joint facility. Is that correct?

Mr. Connelly: I will object to the question insofar as it calls for the conclusion as to the interest of corporate management in Olin. I have no objection to limiting it to the conclusions of this witness.

The Court: Let us have the answer insofar as it is limited to the witness, and you can expand your question if you wish, and I will have to rule on it if it is pressed.

The Witness: Could I have the question again?

[fol. 480] The Court: We will consider the question with the limitation that you are calling for an expression of a view from Mr. Logan alone, his mental decisional position

at the time when the memorandum was written, then you can supplement that question and expand it if you like. Read the question back.

(The reporter read the question as follows:)

"Q. Now that speculation of various possibilities has been placed on the record, the likelihood in terms of Olin's increasing technical knowledge and interest in the field was that at that particular point Olin was more interested in proceeding with an independent facility than it was with proceeding with a joint facility. Is that correct?"

The Court: This is limited to your personal——

The Witness: That is correct. "Olin" herein is defined as the Chemicals Division, and my particular part in that, as distinct from any attitude the corporation might have had at that time, at that time the division was still, as it had been, divided in its opinion regarding these matters. There were certain of our research people who maintained the attitude more or less consistently throughout the years that we should proceed independently. There were others in the division, including myself and Mr. Block, both of us at this stage had more or less decisive power on this situ-
[fol. 481] ation, that our technical people were not yet at the stage where we could handle this project satisfactorily on our own.

So at this time, as throughout this whole period we have had under consideration, there were two opinions within the division. Mr. Block and I had maintained up until this stage that we were not prepared to move independently, and I think this was the divisional view, if there was an official divisional view at that time.

By Mr. Freed:

Q. Therefore you are saying at this particular time there was more of a likelihood that Olin would go joint venture than it would go an independent venture?

A. I am not necessarily saying that, no. I am just saying that we were not prepared to commit ourselves in either direction, and we might even be facing the third alternate of discontinuing the interest in chlorate altogether.

Q. Those certainly are the three alternatives——

A. That is correct.

Q. —That one can consider——

A. That is correct.

Q. —which is a joint venture, or a lone venture, or nothing at all.

Addressing your attention to what was the fact in Novem-
[fol. 482] ber of 1959 at the time you wrote this memorandum, what was the probability that you had in mind when you said, "in all probability we will not proceed with the joint venture"? Were you considering at that particular moment abandoning all interest in sodium chlorate?

A. I do not think we were considering abandoning all interest in chlorate. We were weighing what we could do for the future, and we could see that we were approaching a point where our own capabilities were more satisfactory in terms of a chlorate project than they had ever been. Therefore we were approaching a date of decision.

Q. And the decision that you had in mind at that particular point was of a lone venture, or a joint venture rather than a joint venture or nothing at all?

A. We had no decision in mind at that time. We were approaching a date of decision.

Q. So the three alternatives remained open but the joint venture was not the most likely course according to the exhibit before you. Is that correct?

A. I do not know that I would say it was not the most likely, but it was, certainly in relation to our own capabilities, getting more and more an equality.

Q. Do you recall whether any action was taken by Olin in light of the probability stated in Exhibit 358, action with
[fol. 483] respect to how large or how small the availability of sodium chlorate or resale by Olin in the year 1960 should be, and perhaps to make the record more clear on this point, I should read the second paragraph of Plaintiff's Exhibit 358.

> "Shanaman feels that if we are going to proceed jointly with the production unit he could supply up to 5,000 tons in 1960. However, if we are not going to proceed jointly he would suggest a much smaller quantity, namely, around 2,000 to 2500 tons since their freight equalization cost is heavy."

Do you recall which of those alternatives Olin decided upon around the time of Plaintiff's Exhibit 358, namely, in November of 1960?

A. I am not sure, Mr. Freed, a final conclusion on this point was reached actually until after the first of the year. Maybe it was, but I think the final conclusion was that we would handle about 5,000 tons in 1960.

Q. In order to refresh your recollection on dates I would like to show you a copy of Plaintiff's Exhibit 359, which is the memorandum dated December 10, 1959 from "J.G.J." to "J. G. McMullen."

Who is "J.G.J."?

A. That is Johns.

[fol. 484] Q. Mr. Johns, the sales manager?

A. His name is at the bottom of the memo. Yes.

Q. This memorandum shows a copy to you. Is that correct?

A. That is correct.

Q. The first paragraph of this memorandum reads:

> "Confirming our discussions we will limit our solicitation of third party sodium chlorate sales for Pennsalt to a maximum 2500 tons commitment for the year 1960."

Does that refresh your recollection with respect to the action which you took following the November 18, 1959, expression of probability?

A. I do not recollect that I took any action on this point. This was an action that Mr. Johns took with his sales people as to a specific quantity that would be sold, and this describes how they propose to handle this quantity.

Q. Then Plaintiff's Exhibit 359 only indicates the action which the sales branch of Olin was taking pursuant to your memorandum to Mr. Johns dated November 18, 1959?

A. I think that is all that this memorandum indicates, yes.

Q. It was following this memorandum that you had at the end of or towards the end of December or early January [fol. 485] of 1960, that you had your conversations with Mr. Shanaman and the Pennsalt people?

A. That is correct.

By the Court:

Q. In the normal course of your procedures this decision, which seems to have been one by the sales people, would not have been made without your approval? I see the copy of the memorandum was sent to you.

A. That is right. If I disagreed with this course of action I would have taken some action myself.

By Mr. Freed:

Q. The expression of probability with respect to a joint venture indicated in Plaintiff's Exhibit 358, and the action which Olin took as indicated in Plaintiff's Exhibit 359 were in fact reversed following the subsequent conversations between Olin and Pennsalt. Is that correct?

The Court: Do you mean the tonnage was stepped up for 1960? Is that what you are talking about being reversed, or are you talking about something else being reversed?

Mr. Freed: I am sorry. My question was not clear.

By Mr. Freed:

Q. The probability which was expressed on November 18, and which was acted upon on December 10, namely, the [fol. 486] probability that in all likelihood Olin would not proceed with the joint production facility, that was changed following your conversation at the end of 1959 and the early part of 1960 with Pennsalt?

Mr. Connelly: I will object to that.

The Court: State your grounds.

Mr. Connelly: As argumentative.

The Court: I overrule the objection.

The Witness: Could I have the question again? I want to be sure I got it correct.

(The reporter read the last question as follows:)

"Q. The probability which was expressed on November 18, and which was acted upon on December 10, namely, the probability that in all likelihood Olin would not proceed with the joint production facility, that was changed fol-

lowing your conversation at the end of 1959 and the early part of 1960 with Pennsalt?"

The Witness: Essentially that was changed, yes, when the new facts regarding the proposed plant that Pennsalt brought to us, and the economics were reviewed, the probability was changed and we decided to proceed as we have.

Mr. Freed: Your witness.

The Court: Do you wish a short recess before you commence your redirect examination?

[fol. 487] Mr. Connelly: Yes.

The Court: We will take a ten-minute recess.

(At this point a short recess was taken.)

Redirect examination.

By Mr. Connelly:

Q. Mr. Logan, on your cross-examination you were asked about the market research report on sodium chlorate of December, 1956, prepared by Mr. Hayes. Do you recall that you were asked about that?

A. Yes.

Q. In response to a question asking whether that was the most recent report that you had received, you said that you had also received informal reports as a result of sales of sodium chlorate. When did the sales take place to which you were then referring?

A. The sales began taking place in 1958, 1959 and 1960, and during this period we were constantly receiving reports from our field people as to requirements of various customers, and these were at various times added up into shorter reports, and less complete reports, than the one referred to earlier.

Q. I take it that none of that sales experience had taken place prior to December, 1956?

[fols. 488-489] A. That's correct.

Q. You were also asked on cross-examination concerning your conversations with Mr. Drake in the middle part of 1959, to which you testified. You were asked whether you were continuing to advise Mr. Drake of Olin's plans, or its consideration of a sodium chlorate facility, whether that was pursuant to an understanding or agreement

reached with Pennsalt back in February, 1958. Now, did you communicate to Mr. Drake all of the internal Olin considerations of sodium chlorate?

A. No, I did not communicate everything that was going on in our organization on this subject. There were certain points that we were checking out, specific locations and the power factors referred to, and so forth, and these were specifically discussed with Mr. Drake and others. But we did not transmit to them all of the information that we were collecting and receiving.

Q. Had you ever promised Mr. Drake that you would transmit to him all consideration given by Olin to the problem of sodium chlorate?

A. No, I had never made any such promise.

Mr. Connelly: That's all.

Mr. Freed: No questions.

The Court: You are excused, Mr. Logan.

. . . . . .

[fol. 490] CHRISTOPHER F. BINGHAM, a witness called by the defendants, being first duly sworn, testified as follows:

[fol. 491] Direct examination.

By Mr. De Lone:

Q. Where do you live?

A. In Mount Lebanon, a suburban section of Pittsburgh.

Q. Are you appearing here pursuant to a subpoena served on you by the defendant Pennsalt, and also pursuant to a subpoena served on you by the plaintiff United States Government?

A. Yes.

Mr. Freed: I object, your Honor, to that question insofar as it might imply the witness is on the stand now pursuant to the Government's subponea. He is not.

Mr. De Lone: I am tendering the witness at this time. He has been subpoenaed by both the plaintiff and the defendant. I take it there is no dispute——

The Court: If you are moving to strike the answer I will deny the motion.

By Mr. De Lone:

Q. Mr. Bingham, you are employed by the Pittsburgh Plate Glass Company?

A. Yes.

Q. In what capacity?

[fol. 492] A. I am Vice President, chemical sales, Chemical Division, Pittsburgh Plate Glass Company.

Q. Would you just briefly sketch for us your background, employment-wise; how long you have been with the Pittsburgh Plate Glass, and what have your jobs and responsibilities been?

A. I had previously been employed by Pittsburgh Plate, but since 1949 I have worked with the Chemical Division, as manager of pigment sales; assistant director of sales; director of sales; and Vice President, Chemical Sales. I have been Vice President, Chemical Sales, for five years.

Q. Have you finished?

A. Yes.

Q. Has that always been with Pittsburgh Plate Glas Company, that employment you described, or was it with a predecessor company known as Columbia Southern?

A. I beg your pardon. It was Columbia Southern, a subsidiary of Pittsburgh Plate up until the first of this year when the subsidiary was taken in as a division of Pittsburgh Plate.

Q. In July of 1960 there appeared in the public press an announcement of the plans of Pittsburgh Plate Glass to construct a sodium chlorate facility with a capacity of 15,000 tons at Lake Charles, Louisiana. Can you tell me [fol. 493] whether Pittsburgh Plate Glass has gone forward with the construction of a plant to produce sodium chlorate at Lake Charles, Louisana, as indicated in those announcements?

A. Yes. They are proceeding with this at the present time.

Q. Is the plant under construction at this time?

A. Yes.

The Court: Are there any of those announcements in evidence as to the contents of which you place reliance?

Mr. De Lone: I do not believe there is any announcement in evidence.

The Court: All right. I thought you were trying to incorporate by reference the contents of some such announcement.

Mr. De Lone: I simply wanted to call attention to the events about which I wanted to question him.

Incidentally, if I said July of 1960 I misled the witness. The announcements were in July of 1961. I am not sure which I said.

The Witness: You said 1960, I think. It is 1961.

By Mr. De Lone:

Q. When is it expected that your sodium chlorate plant at Lake Charles, Louisiana, will begin production?

A. Our target is the last quarter of 1962.

[fol. 494] Q. Has Pittsburgh Plate Glass, or its Columbia Southern Division or subsidiary, had any other experience in the production or manufacture of sodium chlorate?

A. Yes, we have a plant operating at Beauharnois, Canada.

Q. Where is that located in Canada?

A. It is south of Montreal, about 15 miles.

Q. In the Province of Quebec?

A. Yes.

Q. Is that operated through a subsidiary company of Pittsburgh Plate Glass?

A. Yes, through Standard Chemical, a subsidiary of Pittsburgh Plate Glass.

Q. Is that a wholly owned subsidiary?

A. Yes.

Q. How long has that plant been in operation in Quebec?

A. Approximately three and a half years.

Q. Do you conduct any other manufacturing operations where you produce sodium chlorate either in the Continental United States or Canada, beyond the two already mentioned?

A. No.

Q. In the Quebec plant do you utilize a cell developed by Pittsburgh Plate Glass or Columbia Southern?

[fol. 495] A. Yes.

Q. The cell is of your own development, is that right?

A. Yes, it is.

Q. The cell is what? It is the component of the plant where the electrochemical reaction takes place that produces sodium chlorate, is that correct?

A. That is correct.

Q. Over what period of time has it been that Pittsburgh Plate Glass or Columbia Southern—I use these terms interchangeably—has developed the cell which it has been employing in its Quebec operation for the last three and a half years?

A. Over what period?

Q. Over what period of time did you develop this cell? When did work start on it, when did you first go into production on this cell?

A. We have been working on cell construction at our Corpus Christi plant since about 1936. Exactly when we started to develop this new type of chlorate cell I am not sure, but I would say it would be many years, ten years.

Q. Does the interest of Pittsburgh Plate Glass—and from here on I am just going to refer to that, but I mean Pittsburgh Plate Glass or Columbia Southern—in the production of sodium chlorate then go back to as early as 1936, its in-
[fol. 496] terest, its consideration or study as distinguished from actual production?

A. Its interest, yes.

Q. What approximately is the capacity of the plant which you operate in Quebec?

A. It is announced at 10,000 tons a year.

Q. Do you have any idea of approximately how many personnel are employed at that plant in a managerial capacity or in an executive capacity?

A. It is a part of our total chlorine, caustic, hydrogen operation there.

Q. Do you have skilled personnel in your employ who work at the plant in Quebec in the production of sodium chlorate?

A. Yes.

Q. Does Pittsburgh Plate Glass have a technical service force which aids it in its efforts to sell industrial chemicals?

A. Oh, yes.

Q. With specific reference to sales of industrial chemicals to the pulp and paper industry, do you have any per-

sonnel in your technical service force who specialize in the technical service problems of the pulp and paper industry?

A. Yes.

[fol. 497] Q. How many personnel in your technical service department are there who so specialize?

A. Approximately four full time.

Q. Four full time?

A. There are four full time employees.

Q. Your company, I take it, is currently engaged in selling products to the pulp and paper industry other than sodium chlorate?

A. Yes.

Q. Are those products chiefly chlorine and caustic soda?

A. Chlorine, caustic soda and pigments.

Q. In that connection would you explain to us the work of these four people engaged in technical service, how they aid you in your sales of products for the pulp and paper industry?

A. When you define technical service, we have two groups actually. We have the technical service group, which is a group of engineers or specialists as a part of sales, who work with the handling of the materials in the plant, the proper uses, and actually assist the mill in sometimes designing bleaching installations.

We also have in the market research group some people who are devoted to product development, who are famil- [fol. 498] iar with the pulp and paper industry and work constantly with it. These two, actually when you refer to technical service people, they work I should say, cross territory, they work together.

Q. You indicated that there were four people full time. They would be in both of those categories you have described?

A. That's right.

Q. Four all told?

A. Yes.

Q. I am not entirely sure that I understand exactly how it is that they aid your sales efforts to the pulp mills?

A. Let me give you an example. Suppose that Plant A wishes to put in a bleaching plant. It is usually our job to try to determine if they are going to use any chlorine or caustic soda, any soda ash, or any product that we man-

ufacture, and we hope to be manufacturing soon sodium chlorate, and to determine what type of bleaching process they are working with, what type of woods they are going to use, what types of pulps they are going to make, and actually get samples of their woods that they propose to use, bring them back to our laboratory in Barberton, Ohio, run sample runs, to try to see what processes are the best [fol. 499] that our products fit into so that we can sell them our products.

That is what these people do. That is an example of what they do.

Q. You mentioned that you have a laboratory somewhere in Ohio?

A. Barberton, Ohio.

Q. Do you have an additional personnel, a staff, a laboratory who work on these, or would the four technical service people you spoke of be the ones that do it?

A. I am counting the supervisor of the laboratory. He has a number of technicians that work for him. I did not count those.

Q. In terms of direct sales force, I am now limiting my question to the pulp and paper industry, and in generally the southern part of the United States, how many sales personnel, as distinguished from technical service people we are talking about, do you have and where are they located in the southern part of the United States, those now who deal with the pulp and paper industry in that part of the country?

A. I think we have 14. They are at Charlotte, Birmingham—Charlotte, Atlanta, Birmingham, New Orleans, Houston, and Dallas.

Q. These are places where you have offices out of which some 14 salesmen work. Is that correct?

[fol. 500] A. Yes.

Q. Those salesmen are all engaged, not full time but some of their time is taken up in calling on pulp mills in the southern area?

A. That is right.

Q. From your standpoint since you have a technical service force and are currently selling caustic in the southeast, does sodium chlorate fit naturally with your existing product lines?

A. Very much so.

Q. For how long a period of time have you had under consideration, and when I say "you," I mean your branch of Pittsburgh Plate Glass, and I take it you have headed this up, how long have you had under consideration the possibility of constructing a sodium chlorate plant at Lake Charles or some area in what we loosely refer to as the southeast?

A. We have been thinking about it in the sales group for about five years.

Q. In your thinking what particular area have you been interested in serving, either describing it by way of use or geographically if you can? What has been your target or the subject of your interests?

A. Since we have a plant located at Lake Charles we are supplying a number of pulp mills, and the pulp busi- [fol. 501] ness is growing in the southeast, and we were thinking about the southeastern United States.

Q. Mr. Bingham, I show you Plaintiff's Exhibit 274, directing your attention specifically to a map which appears—These pages do not seem to be numbered. It appears in the middle. It bears the legend, "Sodium Chlorate Consumers," etc.

Looking at that map could you define for us this target area of the southeast to which you have made reference? What territory are you talking about?

A. What we are thinking about starts over where we show consumption point 6 in Texas, comes up through Arkansas, and somewhere across the Tennessee line, over to the East Coast.

Q. Over to the East Coast, and how far north on the East Coast, Mr. Bingham? There are some numbers there, and perhaps you could define the northern limit as well as the western limit.

A. The point 37 you have indicated there, we are shipping from our northern plant now, so whether we would have shipped from the Lake Charles location which is shown —which is not shown on here, I don't know until we made freight studies whether that would be included in it or not.

Q. You would say that point 37 may be about the—— [fol. 502] A. It is marginal.

Q. Thank you. Beyond the pulp and paper industry in

this territory that you have just generally described for us do you have any plans to market the product of your plant to other industries, and if so where?

A. Yes. We are going to try to sell some to the defoliant industry, and some to the herbicide industry. Our main area would be in the Louisiana-Arkansas-Mississippi area.

Q. You have a plant in Canada, and I understand you said you have shipped as far south as location number 37 on this?

A. I think that is the spot we are talking about.

Q. Somewhere in Virginia at least.

A. Yes.

Q. How long have you been engaged in any sales to a point in Virginia?

A. Approximately a year.

Q. Have you offered any of your product from your Canadian operation to points further south than that?

A. Not actively.

Q. Why not, Mr. Bingham?

A. It is too far away in terms of freight rate for us to make any profit on it, to be profitable to us.

[fol. 503] Q. Have you explored or considered to any extent the attitude of the customer with reference to a customer's willingness, a customer say located in Alabama, his willingness to purchase from you shipments which you might ship from Quebec?

A. Yes. I cannot think of one in Alabama, but we have talked to certain plants located in this area, and they say, "When your are operating in Lake Charles come back to see us."

By the Court:

Q. You say "this area." You are talking about the southeastern part of the United States?

A. The Louisiana-Mississippi area, yes.

By Mr. De Lone:

Q. Mr. Bingham, at the time your company announced this decision to go forward at Lake Charles and did go forward you were aware, were you not, of the fact that Penn-Olin had announced its intention to build a plant at Calvert City, Kentucky?

A. Yes.

Q. Did that announcement by Penn-Olin of its decision to build a plant at Calvert City, Kentucky, alter your plans with reference to going forward with a plant?

A. No plans, it altered our announcement. We prob-
[fol. 504] ably announced a little earlier than we normally would have in this type of construction.

Q. Why?

A. We did not want Olin Mathieson to gobble up all the business. We wanted people to know we were going to be in the business.

Q. From your consideration of this market in the past three years, three or four years, five years I guess you said, since it has been under study by you has the advent of Penn-Olin with a plant at Calvert City enhanced the competition in the southeastern market area?

Mr. Freed: I object to that question.

The Court: There is an objection. Just a moment. State your grounds.

Mr. Freed: The Penn-Olin plant, as we understand it, has only recently begun production, and I am not sure that this answer requires anything more than speculation on the part of the witness.

The Court: Read the question back, please.

(The last question was read by the reporter.)

The Court: I think the form of the question is objectionable. I do not see how a study over a five-year period——

Mr. De Lone: I withdraw the question.

[fol. 505] By Mr. De Lone:

Q. Mr. Bingham, based on your knowledge of the market conditions in the southeastern area which you have previously described, can you tell us what, if any, effect Penn-Olin and its advent has had on competition in the market in the southeastern United States?

A. I am not sure whether it would be Penn-Olin or anyone that builds a plant that starts actively soliciting business in an area such as this is going to increase your competition. That is it as far as we are concerned.

Mr. De Lone: Your witness.

Cross-examination.

By Mr. Freed:

Q. The cells you were talking about at Corpus Christi, Texas, were they exclusively sodium chlorate cells you were working on, or electrolytic cells?

A. You mean since about 1936?

Q. Yes.

A. No, they weren't exclusively sodium chlorate. They were both chlorine caustic and chlorate cells.

Q. With reference to the relationship between chlorine and caustic and sodium chlorate, would you say from your knowledge of the technology and the production of sodium [fol. 506] chlorate that the technology of manufacturing sodium chlorate is very closely related to that of manufacturing chlorine and caustic soda?

A. I certainly would.

Q. Are the manufacturing techniques very closely allied?

A. I believe so, yes.

Q. Does experience in the manufacture of chlorine and caustic soda give a producer a considerable beadstart in going into the sodium chlorate business?

A. We think so.

Q. In your plans to embark on the sale of sodium chlorate in the United States, how much time do you contemplate spending on training your salesmen, your existing chemical salesmen, in order to equip them, give them capability to sell sodium chlorate to pulp and paper customers?

A. I assume you are talking about the same men that Mr. De Lone talked about?

Q. Yes, sir.

A. Well, we will pick certain of these key men from each of these offices, who will go up to our operation in Canada, spend some time at our plant. In fact, this is now scheduled to occur within the next 30 days.

[fol. 507] Then we will visit with our Canadian sales representatives, customers that we are now supplying from our Canadian plant, and learn about their operation in the plant. They will be up there for two weeks, then they will spend some time at our pulp laboratory at Barberton, probably a month total.

Q. And the form in which you will sell, according to

present plans, the sodium chlorate output of your Lake Charles plant will be both in bulk and in package?

A. Yes. Bulk in carloads and in drums.

Q. And the consumers to whom you will make available your sodium chlorate will be in the pulp and paper industry?

A. That will be one type of customer, yes.

Q. And the agricultural chemical industry?

A. Yes.

Q. If you have any customers in the uranium industry in the Intermountain area, would you sell sodium chlorate to them?

A. It is possible, Mr. Freed. We are not going to make any active solicitation of the uranium industry because it is a high freight equalization area for us, and frankly the use of chlorate, according to our best information, is on the decline in the uranium industry.

Q. If you have sodium chlorate available which is excess to your sales but is already in production, would you [fols. 508-524] sell it to the uranium industry in that area?

A. Possibly, if our freight equalization wasn't too high.

Mr. Freed: Your Honor, the Government has several additional question to address to this witness, which come within the scope of direct examination and in the Government's view are very relevant to this case, but which involve, we are advised by Mr. Bingham and his counsel, matters of considerable trade secret.

Mr. Anderson, who is here representing Pittsburgh Plate Glass, would like an opportunity to address the court before the Government asks Mr. Bingham these questions which might disclose trade secrets.

The Court: All right, I'll hear you, Mr. Anderson.

* * * * * * *

[fol. 525] Redirect examination.

By Mr. De Lone:

Q. Mr. Bingham, in the course of your testimony you were asked about sales to the uranium industry and indicated you did not plan to solicit uranium industry business.

Where, to your knowledge, is the uranium industry located so far as the places at which they would consume sodium chlorate? If you would like the map back again——

A. I would say the New Mexico area, and a little north; in that area. I am thinking of Grants, New Mexico, which happens to be a destination I am familiar with, just as an example, Mr. De Lone.

Q. You also described the training that you were going to give your sales personnel by taking them to Canada.

Will you add any additional sales personnel because of your sodium chlorate production, or will the existing force with additional training handle the sales of sodium chlorate as well as the chlorine and caustic they are now handling?

A. We have no plans at this time to add additional personnel or force specifically for sodium chlorate. We are constantly adding to these offices new men, new trainees who fit into our total line of business.

Q. Yes. Could you tell me whether or not the same [fols. 526-528] situation pertains with reference to your technical service force, whether the existing technical service force will also, without added personnel, handle the technical service problems related specifically to your sodium chlorate efforts?

A. We have employed a man in Canada who recently was employed primarily on sodium chlorate technical service and he has left us, and we will replace him.

Since we have become fairly well established we do not feel that he will be needed full time in Canada, so he will be working in the U.S., too. So you might say we are going to add a half a man. That is our plan now.

* * * * * * *

[fol. 529] Monday, November 20, 1961, 10 o'clock a.m.

PRESENT:

As before noted.

Mr. De Lone: Will you take the stand, please, Mr. Land?

HUGH C. LAND, called as a witness on behalf of the defendants, being first duly sworn, testified as follows:

Direct examination.

By Mr. De Lone:

Q. Where do you live?

A. I live in Tacoma, Washington.

Q. By whom are you employed?

A. The Pennsalt Chemicals Corporation.

Q. How long have you been working for Pennsalt?

A. Since 1946.

Q. Would you briefly describe for us the course of your career in Pennsalt?

A. I was hired in 1946 by Pennsalt at their Wyandotte, Michigan, plant to take charge of maintenance and con- [fol. 530] struction; became Assistant Superintendent there and transferred to Philadelphia about 1949 as production manager. I worked as production manager until the spring of 1955 when I became the General Manager of the Industrial Division in the East, and continued in this job until January or February of 1960, when I transferred to the West Coast as Group Vice President.

Q. Today you are Group Vice President on the West Coast. Is that right?

A. Yes.

Q. What in general is your responsibility as the Group Vice President of the West Coast?

A. We have two operating divisions which headquarter at Tacoma, one in agricultural chemicals division which sells products throughout the United States, and the other is an industrial division which essentially sells industrial chemicals into the 11 western states.

Q. One of the products you make at your West Coast operation, your plant in Portland, is the product sodium chlorate, is it not, sir?

A. That is correct.

Q. In your capacity as the vice president in charge of these western operations are you familiar with the general way of the distribution of the product sodium chlorate, that is, of Pennsalt's sodium chlorate product?

[fol. 531] A. I can give you a fair picture as to 1960, my first year on the West Coast. As I have said, we operate an agricultural division which sells products in the whole United States; they do sell some small quantities of sodium chlorate outside of the 11 western states but these are drum quantities and are not a large factor. We also sell sodium chlorate as an industrial chemical mainly in the 11 western states. There is an exception, I believe in the industrial chemical in two areas.

One of our main customers is the Chipman Chemical Company, who primarily handle weed killing in the railroad industry, and I believe we have made some shipments to them in Texas and Minnesota.

There are also three or four small bulk sales to pulp and paper industries outside of the 11 western states, but they are small.

By the Court:

Q. You speak about the sale for industrial uses. Is that all bulk sales?

A. Yes, primarily so.

Q. You mean some sporadic occasional shipments?

A. I remember one drum account, I believe it is into Minnesota, and it is Manganese Chemical, and here they potentially are a bulk user, but I think we have been [fol. 532] shipping them drums since 1955, and they are used in ore processing.

By Mr. De Lone:

Q. Mr. Land, it will be shown by stipulation that in 1960 Pennsalt sold 15,235 tons of sodium chlorate, all produced at its Portland, Oregon, plant, and that excluding sales made through Olin Mathieson the only sales it made beyond the 11 western states amounted in the aggregate to 1,590½ tons, which tons were shipped to Minnesota, Texas, Iowa, Kansas, Missouri, Oklahoma, Florida, Virginia, and Alabama.

As to such shipments beyond the 11 western states will you state as I call them off to you the reasons the shipments were made and the use for which the sodium chlorate was destined, if you know.

First, Minnesota, shipments of 419.6 tons to Chipman in bulk, and 150 tons in drums to Manganese Chemicals.

The Court: What year are we speaking of?

Mr. De Lone: 1960.

The Witness. The Chipman I referred to is for railroad weed killing. The Manganese Chemical, I believe, is ore processing.

By Mr. De Lone:

Q. In Texas there were shipments of 322 tons in bulk to Chipman.

[fol. 533] A. The same customer for use in the railroad herbicide area.

Q. When we refer to a bulk in distinction to drums, what do you mean? What is the difference between drums and bulk, a method of shipment?

A. Yes. It is usually a hundred-pound drum which is shipped in LCL, or carload lots, where the bulk shipments are in a bulk tank car, a hopper car arrangement.

Q. These two shipments to Chipman, or a number of shipments to Chipman, to Minnesota and Texas in 1960, are the only shipments to Chipman outside the 11 western states. Do you also ship to Chipman in the 11 western states?

A. Our contract with Chipman provides for Chipman to under-contract in, I believe, five states: Washington, Oregon, Montana, Idaho and California. We have the right to ship outside of that territory, or the right to refuse to ship outside that territory, under the agreement.

The Court: You mean on order from Chipman?

The Witness: On order from Chipman, if they request it. We have to ship under the agreement in the five states I have mentioned, but we have the right to refuse orders outside those five states. Chipman is, as you will recall, the original customer for Pennsalt's sodium chlorate at its Portland, Oregon, plant.

[fol. 534] By Mr. De Lone:

Q. You mean going back to the time it was first produced in 1941?

A. Going back to 1941. At that time I believe they took

all of our production. Consequently, we have worked very closely with Chipman.

Q. You made reference to the fact that in these five western states you are obligated to Chipman, whereas beyond that you have an option, if they request it. Are you obligated in an unlimited amount or up to a certain tonnage to deliver to Chipman in those five states?

A. Yes, I believe there is a limit on the tonnage.

Q. Turning then to a series of other shipments in this total group outside the 11 western states, in 1960, you shipped to Iowa 49½ tons in drums, to Kansas 30 tons in drums, to Missouri 35 tons in drums, to Oklahoma 40 tons in drums, and to Florida in drums 40 tons. What could you tell us was the reason or the use for those drum shipments in those states?

A. I believe that all of those shipments were made by our Agricultural Chemicals Division as a weed killer or a fill-in for use as a weed killer.

Q. I take it from what you said earlier that your Agricultural Chemicals operation is an entirely different department under your jurisdiction. Do you have one man [fol. 535] in charge of Agricultural Chemicals and a different man in charge of Industrial Chemicals in your West Coast operation?

A. Both of these divisions are headed by a general manager who is responsible for his sales and profits from his operation.

Q. Then is the Agricultural Chemical sales force, if you will, a different group than the Industrial Chemical sales force?

A. It is a complete, separate and different entity.

Q. Another shipment to Florida in 1960 in bulk was 363½ tons, which went to Foley, Florida.

A. I believe this shipment to Foley, Florida is to Buckeye Cellulose, a division of Procter & Gamble Company, and this is for the treatment of pulp.

Q. How long, if you know, have you been handling that Foley account?

A. I believe we obtained that Foley account when I was general manager of the Industrial Division East, in about the middle of about 1955.

Q. Why is it that you are shipping to Foley, Florida to that account?

A. Foley, Florida, is a favor to Procter & Gamble, who is a big customer, a large customer, in other products for the Industrial Division East. They had a tank car, their [fol. 536] own equipment, which they wanted to use in the purchase of this chemical, and we agreed to fill their equipment. This gives them an advantage in that the return mileage is payable to the owner of the transportation. As long as Pennsalt was willing to equalize the outgoing freight with eastern producers, which we were at the time, then Foley was able to get the advantage of the return mileage through the use of their own tank car.

The Court: I am not exactly certain that I understand what that arrangement is. Perhaps it can be explained a little more simply, perhaps with an illustration or example of a supposititious kind. It would be a little help to me.

By Mr. De Lone:

Q. Mr. Land, when we talk about an allowance for the use of Buckeye equipment, or the Procter & Gamble equipment—Buckeye is a subsidiary of Procter & Gamble, is that right?

A. Yes, sir.

Q. When we talk about an allowance for the use of their equipment, this is a payment made to the car owner by the railroad over whose line they travel, is that correct?

A. That's right.

Q. And it is on a mileage basis?

A. It is on a mileage basis.

Q. So that if you ship to Foley, Florida and you price [fol. 537] on the same basis as the price at which they could procure material from, say, Columbus, Mississippi, you sell at that price, you pick up any freight difference, they get the benefit of the car allowance for all the mileage the car travels between Portland and Florida and back, is that correct?

A. I believe they get the allowance for the return trip which is empty. This is the usual arrangement on all freight, as I understand it. Under any commodity that we ship there is a freight charge for shipping the commodity, and the railroads give an empty mileage allowance for the return of that car to its destination. Normally this comes

back to the shipper, who is the producer. This is an unusual arrangement where the customer actually gets the allowance.

By the Court:

Q. I don't know that it is terribly important, but I would like to understand it. When you ship to Foley, do you sell Foley f.o.b. Seattle or f.o.b. Foley?

A. We sell it f.o.b. Portland, freight equalized with their nearest producer.

Q. When you say f.o.b. Portland, what do you mean "freight equalized with their nearest producer"?

A. The customer then says, we can obtain this material from Columbus, Mississippi. The freight from Columbus, Mississippi is X dollars; the freight from Portland is Y. [fol. 538] dollars, so we will pay you only the freight from Columbus, Mississippi.

Q. In other words, to state it a little differently, you sell them f.o.b. Florida but in figuring your price you take your f.o.b. Portland price and add to it an amount which is equal to the freight between Columbus, Mississippi, and Florida?

A. That is the end result.

Q. That is a feasible thing for Procter & Gamble, or Buckeye, its subsidiary, because of certain collateral advantages it gets by reason of owning a tank car, advantages which it gets from the railroad?

A. That is correct.

Mr. De Lone: Thank you, sir.

By Mr. De Lone:

Q. I don't know that I did cover with you, Mr. Land, in the course of calling these items off, the fact that in 1960, 150 tons in drums was shipped to Manganese Chemicals in Minnesota. Why was that shipped?

A. I believe we covered that, and that was a shipment for ore processing, I believe.

Q. Is that again a customer of long standing and do you recall approximately how long you have been servicing that account?

A. I believe it was obtained about the same time as the [fol. 539] Buckeye Cellulose account, in mid 1955.

Q. Then this was obtained by the Industrial Division East, I take it?

A. As I remember, it was.

Q. In the same year, 1960, you shipped 90.8 tons in bulk to Union Camp Bag in Virginia.

A. Yes. This is for the bleaching of pulp.

Q. Are you familiar with the circumstances surrounding why that shipment was made and how the business was obtained? If you are not, don't hesitate to tell us, Mr. Land.

A. I believe that this is due to the fact that L. M. Shanaman, our sales manager in the West, knew the purchasing agent and was able to obtain a car or two of business as a personal favor to him.

Q. Do you know how long those shipments have been going on?

A. I believe only the last two years.

Q. And in Alabama you shipped 50.1 tons to Gulf States Paper. Is that likewise for the pulp bleaching use?

A. That is for the bleaching of pulp. I believe this was obtained by our Agricultural Chemicals Division manager again as a personal favor, where he knew the purchasing agent of the company.

Q. In the current year 1961, to your knowledge, has there [fol. 540] been a substantial change in the patten of distribution of sodium chlorate produced at Portland, Oregon as against the 1960 pattern which we have just been discussing?

A. I have not reviewed the 1961 figures, and I only usually do that at the end of the year so I can't tell you precisely what the 1961 figures show, but do not believe that there is any change in that general pattern.

Q. Today could Pennsalt dispose of the capacity of its Portland plant entirely west of the Rockies?

A. Yes, sir.

Q. Now turning, Mr. Land, to the period when you were manager of Pennsalt's Industrial Division East, the period from 1955 to 1960, would you tell us essentially what your responsibility was in that capacity as manager of the Industrial Division East in those areas?

A. I was responsible for the production and sale of products produced in the Industrial East plants, and for the profit from that operation.

Q. Had you prior to 1955 had sales responsibilities in Pennsalt?

A. No.

Q. At this time from 1955 on were Agricultural Chemicals handled as a responsibility of the Industrial Division East?

A. I believe about the first of 1955 they were transferred [fol. 541] to the West as a responsibility of our western operation. However, continuing in early 1955 we produced some products for them, I believe both DDT and BHC, which were continued as a production item in the East.

Q. Did you in the Industrial Division East produce any sodium chlorate?

A. No.

Q. As a manager of the Industrial Division East, or as a manager of any division of Pennsalt what was your responsibility with reference to new projects or new products or processes?

A. A division manager has the responsibility not only for the profits from the products he is producing at that time but also to plan for new products or revisions to his processes over a five-year period.

We have a regular planning program within Pennsalt, and each division prepares a part of this plan. We call it our plan for future growth, or you will find reference to it as a five-year plan, under which each division manager assembles potential projects which are submitted to the corporation for review, and once accepted by the corporation are incorporated into a company program for growth, or a five-year plan.

Q. In this period of 1955 to 1960 would a sodium chlo- [fol. 542] rate plant at some location in the East or Southeast, such as at Calvert City, had it been proposed would it be one of the processes or projects in this category that would be subjected to the procedure you have described?

A. Yes, it would. I believe it would go back even a little bit prior to 1955, when I became general manager. Immediately prior to 1955 I worked in the Industrial Division as its production manager. As such I worked closely with George Grogan who was then sales manager in the division in the development and recommendation of these projects to Mr. William Drake, who was then general manager of

the division, so I can recall working with Mr. Grogan on a sodium chlorate project as early as late 1954 and continuing then during the later period you mentioned.

Q. I wanted to be sure we understood the corporate procedures first, and we will go into them in more detail as they affect this case.

I take it from your answer then that the normal course if you were to embark on constructing a sodium chlorate plant somewhere in the south or east, and selling its products, would be first to incorporate that into a division recommendation for the program for future growth or the five-year plan?

A. That is correct.

[fol. 543] Q. The second step would be for the corporate management to accept that recommendation and take it into the corporate plan, if you will, for future growth?

A. That is correct.

Q. If those two steps are taken with any new project such as this where does it go after it has been incorporated into the corporate program for future growth?

A. Once it is accepted as a part of the corporate program for future growth it then goes back to the division to do the necessary engineering, to prepare an appropriation request. Under our procedure we do at this point an essentially complete engineering before we take this appropriation back internally to our management committee or now our appropriations committee, and if it is approved there it will be submitted to the board of directors who must approve all appropriations over $50,000.

Q. When you say, "We do virtually a complete engineering before submitting an appropriation request,"——

"We" is a broad term. I want to understand the mechanics so we all see how it works within your organization.

A. It can work several ways, depending upon the size and nature of the project.

The engineering can be done within the division, or [fol. 544] it can be done by——

Q. That is within the division that has sponsored the project?

A. Within the division that has sponsored the project.

Q. Yes.

A. —or it can be done by a staff division of the company which would be our Technical Division, and our central engineering department, or it can be done at an outside engineering office, usually under the direction of our central engineering department.

However, the preparation of the engineering is done for the division manager involved. He must be willing to accept the figures as presented to him and present it at his project to the management committee or the appropriations committee. This is work done for him.

Q. Then before he finally presents a request to have the money appropriated he gets the engineering results together and he must decide whether he is still willing to sponsor the project and ask for the money?

A. I did not emphasize it, but I am sure it is obvious that there is more here than just getting the engineering figures. You must have a definitive sales estimate; you must actually know what the market is; and this is incorporated into the program that is presented to the man-
[fol. 545] agement committee.

Q. In an appropriation request, so we can simply keep these two terms separate——

A. In an appropriation request.

Q. Thank you. You alluded earlier to the fact that even before you became manager of the Industrial Division East you recalled something about working with Mr. Grogan on this subject of sodium chlorate.

Would you tell us your first contact with the possibility of a sodium chlorate plant somewhere in the South, or Southeast, or East, a Pennsalt plant?

A. The possibility of considering a chlorate plant in the East became a reality when we actually installed a plant at Calvert City, Kentucky, in that at this point we had low cost power available to us from the Tennessee Valley Authority; we had also in 1953 completed a chlorine caustic operation which gave us experience in electrolytic cell operation; and so about this period we could for the first time realistically look at producing sodium chlorate in the East.

Perhaps the most essential factor in the production of sodium chlorate is low cost power, this is a must.

Q. You said the possibility became a reality. Do you

mean by that that the sodium chlorate plant became a real-
[fol. 546] ity, or the consideration of it became within reach?

A. I believe that consideration came within reach is a better way of phrasing it.

Q. I understand that this is related to the fact that you had an operation at Calvert City with low cost power.

Was your first consideration of this after you became division manager of the Industrial Division in 1955—What was your consideration with Mr. Grogan you mentioned earlier?

A. It really started in 1954. Mr. Grogan felt that it was possible to sell some sodium chlorate, and he at that time made a study, largely on his own, working through the one man he had in the South, I believe in Atlanta, Georgia, and contacted the pulp and paper mill in the Southeast and came up with an estimate of the amount of sodium chlorate he felt could be sold. This estimate was actually given to our central engineering department for a preliminary look-see at the economics to determine whether such a plant was feasible, and whether or not it could be included in our division planning.

Q. Mr. Land, I show you Plaintiff's Exhibit 64. I note on there at the top the number "L-14". What does that mean?

A. That is Pennsalt's designation for "Hugh C. Land."

Q. You work by letters and numbers rather than names
[fol. 547] for the distribution of copies. Is that right?

A. Yes.

Q. Is this P-64, does this show the estimate by Mr. Grogan to which you have just made reference?

A. It does. It records that Mr. Grogan felt he could sell from 5,000 to 8,000 tons per year of sodium chlorate out of a plant located at Calvert City.

Q. Do you know whether Mr. Grogan had made any effort either at this time or previously to sell any sodium chlorate out of Portland as distinguished from out of Calvert?

A. I do not believe that he had.

Q. Do you know how he assembled this estimate of 5,000 to 8,000 tons out of Calvert?

A. He assembled it virtually himself and working through the one salesman we had in the South, I believe we had a man by the name of Bob Wurst of Atlanta, Georgia, who was in this immediate area, and through his contacts and Mr. Grogan's personal contacts with the pulp and paper industry they determined this was approximately the amount of material they could sell.

Q. What was the name of the man at Atlanta?

A. Bob Wurst.

Q. Is he still there?

A. I believe he died last year.

[fol. 548] Q. You indicated that he was the one salesman —I take it you mean for Industrial Chemicals—in the South?

A. I do mean for Industrial Chemicals, and I mean essentially the Southeast.

Q. Has he been replaced?

A. Yes. He has been replaced by a man from Philadelphia, I believe Mr. Binns.

Q. Is it still just one man?

A. It is still just one man.

Q. Is he responsible for chemicals other than sodium chlorate, and for sales to industries other than the pulp and paper industry?

A. Yes. He is responsible for the sales of all industrial chemicals in that area.

Mr. De Lone: Would your Honor indulge me a moment? There is some confusion about copies and I want to be sure we are both working the same.

By Mr. De Lone:

Q. Mr. Land, you made reference to the fact that as a result of Mr. Grogan's study or estimate of the potential market for sodium chlorate out of Calvert some studies on the economics were made.

I show you PX-66 and ask you if that is the study to which you have reference? It is a document dated March [fol. 549] 8, 1955, from Mr. Woodard to Mr. Drake.

A. Yes. Mr. Woodard is the chief engineer of our central engineering department. He says in this memorandum that he has used plant cost capital cost figures from

Mr. Shanaman who was head of our West Coast operations, and who could supply information on capital costs of a chlorate plant from his existing operation.

He shows that his preliminary investigation of return on investment would be 6.6 to 10.5% return for a 7200 ton per year plant, and 10% to 14.9% for a 12,000 ton per year plant.

Q. At this time in 1955 what was your company's policy with reference to the return sought or would seek in a new project such as this?

A. I believe it was 30%, the guideline that was set as a standard for projects of this type.

Q. The concluding paragraph says:

> "Under these conditions the basic return for sodium chlorate manufacture is not attractive. We believe the expense of refining these figures further would be unwarranted."

To your knowledge were the figures refined any further following P-66, March 8, 1955?

A. Not directly as a result of—They were tabled as [fol. 550] a result of this memorandum.

The initials that you see at the top of the memorandum signify that we all agreed that the figures should not be refined further at this time.

Q. I am sorry. I meant to ask you about those and I had a copy that did not have it on there.

I see at the top—Would you just interpret that so we can understand the routing and what happened to this document? There is a lot of scribbling on the top there.

A. This document was sent to Mr. Drake, who either at this time was the general manager of the division or had just recently been made the executive vice president of the company. I became the general manager of the division at the time he became the executive vice president, and we had a transition period.

Since the original work was initiated by Mr. Drake the report came back to him. He then sent it to his people operating in the division, and you will note from the initials, the top one was "L-14." The top initials are mine.

The second initial is "L-16," Mr. Lucard. He was head

of our market development group in the division. He said "Yes."

The third set of initials are Mr. Grogan's, "G-11". He said "Yes."

[fol. 551] The fourth set of initials are "C-28," Mr. Collins, who was then an assistant to Mr. Beitzel, the president, and he initialed yes, that he agreed that these figures should not be further refined.

Q. In essence Mr. Drake said, "Do you agree with the conclusion here," and each of you to whom he sent it ticked off and said "Yes," and that is what this scribbling at the top means?

A. That is correct.

Q. Following that did you or Mr. Grogan then pursue any further the question of sodium chlorate out of an Eastern or Southeastern plant?

A. Yes. From March of 1955 until about the end of 1956 I can remember three efforts made in the division to improve the return on investment shown in this memorandum.

As I recall we had information that a gas transmission company would be willing to become a partner, and the essence of the partnership would be that they would contribute capital, as much as 100% of the capital, and take a nominal return, and Pennsalt would contribute the know-how of manufacture and be responsible for the sale. Consequently we investigated the possibility of obtaining a partner on this basis.

Q. I want to show you a document in that connection. [fol. 552] I show you, Mr. Land, Plaintiff's Exhibit 68, a memorandum from Mr. Woodard. He was in engineering, did you say?

A. He was the chief engineer of our central engineering department.

Q. —to Mr. Grogan dated April 28, 1955. Does this reflect the sort of arrangement you were just describing with a gas transmission company?

A. Yes. This talks about—I believe in this case they are talking about the partner supplying 100% of the capital, and by that I mean the fixed capital on the job, and Pennsalt then would supply the working capital and know-how for producing the product and the sales effort.

This shows a very favorable return to Pennsalt. How-

ever, we were not able to find a partner that was willing to go along on this basis.

Q. It was pursued but did not come to fruition, I take it?

A. No, sir.

Q. The third sheet of this document shows a return on Pennsalt's investment varying between 42% and 62%, quite in contrast to the return figures on the earlier document. How did the return jump so much, Mr. Land?

A. Well, it was strictly the fact that some $3,500,000 was going to be contributed by the partner, and the figure [fol. 553] used here was at 6%.

Q. The partner would draw 6%, or get a 6% return on his contribution of all the capital, is that right?

A. That is correct. That is the theory behind this proposal. It wasn't very practical and we weren't able to get anyone to go along with us.

Q. What would Pennsalt get a return on?

A. The return would essentially be the working capital, the accounts receivable, the inventory, and the miscellaneous dollars invested. This would be nice if you could do it. We weren't able to.

Q. You mentioned that this was one of three attempts to go forward with sodium chlorate to improve the return so that you could go forward with it?

A. Yes, sir.

Q. What were the other two?

A. Another approach I remember was that there was some feeling that if the plant was built in Puerto Rico, there would be a tax advantage. So some figures were put together to reffect this tax advantage, and while it was considered within the company I don't believe anything concrete came of this attempt either.

The third proposal was a suggestion that we contact someone else in the industry who was interested in selling [fol. 554] sodium chlorate, and I believe there were some initial contacts with Olin Mathieson to see if we could get a larger share of the chlorate market through working with a partner. I believe in this period there were some initial contacts made with Olin Mathieson.

Q. Did you make those contacts?

A. I did not make the contacts. They were made by George Grogan.

Q. Was Grogan under you? Did he report to you, and does he at this time report to you?

A. At this point in the program he was manager of sales reporting directly to me as Division Manager.

Q. Could you fix in a general way the time period in the course of which Mr. Grogan, as far as you know, had some discussion with Olin Mathieson? If it will be of any aid to you, I show you PX-73.

A. Yes. I believe that this is the end of the period starting in early 1955.

Q. Following that March 8th memorandum which showed the return for yourself was unattractive?

A. Correct. Starting with March 8, 1955, to December 27, 1956, where it is reported here to Mr. Drake. I am sure that it is within this period of time.

Q. I see in this exhibit, PX-73, it says, "Incidentallly, [fol. 555] the last time we talked with Olin Mathieson about building a chlorate plant they told us they had investigated the possibility of building a plant in the East and that their cost figures, both capital and manufacturing, were surprisingly close to ours."

You wrote this memorandum. I take it that had reference to what Mr. Grogan had reported to you, is that correct?

A. That is correct.

Mr. De Lone: It is called to my attention that I may have referred to this document as PX-63 rather than 73. I will ask the Court Reporter to make sure that it comes out 73.

By Mr. De Lone:

Q. Did whatever talks Mr. Grogan had with Olin Mathieson ever come to fruition in terms of moving forward with any joint venture with Olin Mathieson in this period prior to December 1956?

A. They did not.

Q. Did they come to the point where the Division Manager felt they were sufficiently concrete that he should get into them and see if they should be pursued further?

A. No.

Q. You recall about this same period in December of [fol. 556] 1956 that the Oldbury Chemical Company an-

nounced that it was going to increase the capacity of its Mississippi plant. I show you in that connection Plaintiff's Exhibit 71.

A. I can remember this letter very well since it is very disconcerting to see your competition expanding in an area you would like to be, and you find yourself unable to justify the project.

Q. It has essentially been your responsibility up to this time, had it not, if there was to be a sodium chlorate plant in the East, to recommend it?

A. It certainly was, and this letter suggests that maybe I didn't know what I was doing.

Q. I see that you received a copy of PX-71, which perhaps might be referred to as Mr. Drake's needle, and also a copy of Mr. Fred Shanaman's response to that, PX-72. Do you have that before you?

A. Yes, sir.

Q. PX-73, which I showed you previously, your memorandum to Mr. Drake of December 27, 1956, is your response to Mr. Drake's memorandum to Mr. Shanaman of December 17th, and Mr. Shanaman's reply to Mr. Drake of December 20th?

A. That's correct.

Q. Your memorandum, PX-73, starts out with the words, [fol. 557] "I agree wholeheartedly with Mr. Shanaman's comments of December 20." What comments of December 20?

A. Essentially I am agreeing with the fact that we should determine once and for all why we are not able to find a suitable project for sodium chlorate in the East. At this time we had been reviewing the project for some two years. We find that others are at least expanding their production in this same market area, and we do not have a project. Consequently, I am agreeing that it would be a good think for someone else to take a look at this opportunity to see whether or not we in the division have been seeing all that was in it.

Q. Was it decided, as apparently both you and Mr. Shanaman agreed, that you would make a further investigation to see whether or not Pennsalt could go forward with a sodium chlorate plant in the East or South?

A. Yes. This letter of January 22 from Cooper Willits to Dr. LaLande records——

Q. That is a letter that is marked PX-74?

A. Correct. It records the result of a meeting which set up a task force headed by Dr. LaLande, and as members, Errol Karr, who was technical supervisor on the West Coast, and Mr. Glenn More, who was General Manager of the Industrial Division on the West Coast, as members of this committee.

Here we are bringing in the Technical Division and [fol. 558] the West Coast people for their knowledge of chlorates to review Pennsalt's position in sodium chlorate, with specific relationship to the Southeast.

Q. Did that group, or task force as it is called, in due course attempt to answer the questions set forth in PX-74, and in that connection I show you Plaintiff's Exhibit 82?

A. Yes. This report, you will note, is titled Part One. It was the feeling of the committee that they should initially report on the return on investment phase of this project to see if with a further refinement of the engineering figures we were able to obtain a project that was worthwhile to Pennsalt.

You will notice that the figures on page 2 show that for a 15,000-ton per year plant the return on total investment was 11.4%. If you went to a 20,000-ton per year plant, the return on investment was shown on page 4 to be 14.1%.

Since this rate of return on figures substantially higher than we in the Industrial Division had felt we could sell was still not up to company standards, they logically raised the question should we go on with Part Two of the task force, which would be to make a more detailed survey of the market position.

[fol. 559] Q. Did they go forward, or did someone go forward with Part Two, finishing out the study from the marketing standpoint?

A. Yes. The initial approach was to ask the Industrial Division in the East, and the Industrial Division in the West, to contribute a man to the study, and a third man was to come from the Market Development Section of the Technical Division. This three-man group would then prepare a market evaluation of sodium chlorate in the East.

Since our original market information had been made by our sales people, and Mr. Grogan, it was very difficult for us to release a man on a full time basis. The Industrial Division in the West had the same problem. Consequently, it was decided to go outside, and I believe Arthur D. Little was hired to make this survey, and they reported subsequently, later in the year, along with a report from our Market Development Division.

Q. Arthur D. Little's report, to which you have made reference, Mr. Land, is Plaintiff's Exhibit 96-B, is that correct?

A. That is correct.

Q. And Plaintiff's Exhibit 96-C is the Commercial Development Department's comments on the Arthur D. Little report?

[fol. 560] A. That is correct. I saw them all together.

Q. Those reports, as I think show on their face, were received one in the late summer and the other in the early fall of 1957, about October. Did the Pennsalt management, or your division, then come to grips with the total task force report, Parts One and Two, with reference to whether or not Pennsalt would erect *a* construct a sodium chlorate plant in the East or the South?

A. When I received a copy of these reports, and as I received it it was a single report, I sent a copy down to Mr. Grogan, who had worked with the figures originally for me. However, we did not do anything with it of a material nature until after the management committee had been assembled to review the report together.

Q. I show you in that connection Plaintiff's Exhibit 99. Is that a memorandum of a management meeting to consider the Arthur D. Little report, and the other reports that had been assembled on this subject?

A. Yes, it is, and as a result of this meeting I believe I asked George Lawson, who at this time was head of the sales of Industrial Divisions, to review the report and give me an up-to-date estimate of his feeling of what the Industrial Division could sell in terms of sodium chlorate to the southeast.

[fol. 561] You will also note on the last page that the Central Engineering Department was also asked to give us some additional estimates as to capital cost.

Q. I show you Planitiff's Exhibit 97. Pursuant to what was decided at this meeting of November 6, which is reported on PX-99, did you then write the memorandum PX-97 to Mr. Lawson, then in charge of sales?

A. I did.

Q. Did you also discuss at that time with Mr. Lawson, or anyone else in the Sales Department under you, the prospects for sales of sodium chlorate in the East?

A. I did not discuss it formally with Mr. Lawson since he was unfamiliar with the sale of sodium chlorate in the East, but did discuss it in general terms with Mr. Grogan, who at this time was Field Sales Manager for the Industrial Division, who, as you recall, had made the original survey.

Q. Do you have PX-98 with you there, a memorandum from Mr. Grogan to Mr. Lawson?

A. I do, and this reflects in general the discussion that I had with Mr. Grogan.

Q. Does it allude to any discussion you had with him, or do you mean that the tenor of this is the same?

A. The tenor of this is the same as the general discussions we had during this period.

[fol. 562] The Court: For my own future reference I would like the record to show that both PX-99 and PX-97 refer to the possibility of a joint venture with Olin Mathieson.

By Mr. De Lone:

Q. Incidentally, Mr. Land, in the concluding page of Plaintiff's Exhibit 99, among next steps to be taken, it says, "L-14 will have explored the partnership idea with Olin Mathieson." You are L-14, are you not?

A. That is correct.

Q. Did you subsequent to November 6th and prior to a meeting about which I am going to ask you on December 5, 1957, explore this idea with Olin Mathieson?

A. I didn't for the straightforward reason, at least to me, that if it were possible to obtain a project solely for Pennsalt, this would be the Division's preference. So consequently I talked both to my own people about the marketing and to the Central Engineering people about

the capital cost and return estimate figures, leaving for a later date the possibility of discussing a joint venture idea with Olin Mathieson. Consequently, I did nothing with that part of the memorandum.

Q. The next succeeding item on PX-99 is, "W-17 will prepare updated cost estimates." I show you Plaintiff's Exhibit 100 and ask you if that reflects the updated cost [fol. 563] estimates on these tonnages of 25,000 and 30,000 tons, as requested in PX-99, paragraph 9(c)?

A. Yes. This shows that the 25,000-ton per year sodium chlorate plant was considered. It also shows that Mr. Heitman was contacted again. Mr. Heitman is a project engineer at Tacoma, Washington who is familiar with the capital costs of the sodium chlorate plant. It also continues that the return on total investment is 15.9%.

Q. Did the same group, most of them, subsequently meet to decide what Pennsalt would do in connection with this possibility of a sodium chlorate plant in the Southeast which had been under study by the task force and which was considered at this meeting of November 6, 1957? In that connection I show you Plaintiff's Exhibit 102.

A. On December 5, 1957, a meeting was held primarily to discuss the possibilities of Pennsalt developing a project of sodium chlorate in the East. Remember at this time the division had spent approximately two years in its review. We now have another year of time spent by people outside the division looking at the project, and we still are not able to visualize a project that is reasonable under Pennsalt's standards.

Consequently, the conclusion primarily reached at this meeting was that we all agreed it was unlikely that Penn- [fol. 564] salt would be able to build a chlorate plant in the East on its own. If it were unlikely, we might still be able to do this job through a partner, and we concluded that Olin Mathieson would be a likely partner.

Q. After so concluding, did you contemplate or authorize any approach to Olin Mathieson?

A. Yes. At this period Mr. Shanaman had some sodium chlorate from his Portland operation which he could not sell in the 11 Western states, and consequently was willing

to supply 2,000 tons per year to Olin Mathieson for an introductory marketing program in the East.

I believe at this meeting the authorization was made for Mr. Shanaman to work the details of this arrangement out with Mr. Logan. I also believe at this time it was suggested that Mr. Drake would contact Olin Mathieson with regard to a joint venture and at this point the contact with Olin Mathieson was out of my hands and so I actually never did anything about the Olin Mathieson account.

Q. You said that Mr. Shanaman had some tonnage that he couldn't sell. Do you recall, or are you familiar with how it was that he had excess tonnage at this time, in December of 1957?

A. I believe he had expanded his plant in the fall of 1957 and consequently had initially some material that [fol. 565] could be sold outside of the 11 western states, and that it was his practice to so move it until the time that he was able to sell it closer to home, at which time he remained within his normal selling area, which is the 11 western states.

Q. We have been referring to "his plant" and "his normal selling area." I want to be entirely clear. Mr. Shanaman at this time was the head of the West Coast subsidiary of Pennsalt, is that correct, referring to Mr. Fred Shanaman?

A. I can't be sure that it was still a subsidiary at this time, but he was certainly in charge of our operations at Tacoma, Washington, which included the sodium chlorate plant at Portland, Oregon.

Q. It was indicated earlier that you sent PX-97 to Mr. Lawson asking for his comments on the various studies and reports that are chiefly marked PX-96, and that you did have some discussions with Mr. Grogan prior to December 5, 1957. Did you get a response from Mr. Land prior to this December meeting, or did you get it thereafter? I show you in that connection Plaintiff's Exhibit 107.

A. I believe you mean did I get it from Mr. Lawson?

Q. I beg your pardon. Did you get it from Mr. Lawson?

A. I believe I have explained that about this time we consolidated two operating divisions into the Industrial

[fol. 566] Chemicals Division. Consequently, Mr. Lawson was new at working with me as head of sales.

In January he replies to me that he doesn't believe he should do any further work on sodium chlorate since it is not an active project in Pennsalt.

Q. When you say that you have reference to PX-107?

A. I have reference to PX-107.

Q. Had you discussed with Mr. Lawson prior to the time he wrote PX-107 the decision arrived at the meeting of December 5, PX-102?

A. Yes, I am sure we had given him the results of the meeting so that he knew generally the status, although, as you will see from further letters to Mr. Lawson, I still asked him to complete his original assignment, for several reasons.

First, I wanted the information complete in the file. We had spent a good deal of time on sodium chlorate. We had spent several thousand dollars with Arthur D. Little to obtain market information, and I wanted that translated into industrial chemicals experience and recorded in the file. Even though we had verbally gone over the information I felt it was good discipline to put it into the file. I also wanted to let Mr. Lawson know that assignments of this type should be completed.

[fol. 567] Q. You have made reference to further correspondence. I show you Plaintiff's Exhibit 108, Plaintiff's Exhibit 117, Plaintiff's Exhibit 350, and Plaintiff's Exhibit 124, and ask you if that is the subsequent chain of correspondence to which you have made reference?

A. It certainly is. I can assure you that the next report I got in a little shorter time than the first one.

Q. Was there any other reason than the one you have mentioned of wanting to complete the file and wanting Mr. Lawson to know that when you asked for something you would like to receive it, was there any other reason for your pursuing Mr. Lawson for sales estimates for sodium chlorate, or sales forecasts, in light of the decision of December 5, 1957, that Pennsalt would not go forward with a plant on its own?

A. Initially those two were the primary reasons. However, as time marched on, we began to become more interested in ammonium perchlorate. You will recall that at

the start of 1958 ammonium perchlorate was getting a lot of attention as a missile oxidizer, and consequently, as time goes on in 1958 and the importance of ammonium perchlorate becomes evident to Pennsalt, since sodium chlorate is used to make ammonium perchlorate, the figures become important for that reason later.

Q. From your standpoint as Division Manager of the [fol. 568] Industrial Division of Pennsalt did you ever seriously consider after December 5, 1957, the possibility that you would recommend that Pennsalt erect or construct a sodium chlorate plant alone, exclusive of any ammonium perchlorate feature, a sodium chlorate plant alone and on its own in the Southeast following December 5, 1959?

A. As Division Manager I had no serious plans, and remember of no considerations of a sodium chlorate plant by itself after December 5, 1957.

Mr. De Lone: If your Honor plans a morning break this might be an appropriate time.

The Court: Very well. We will take a ten-minute recess.

(At this point a short recess was taken.)

Mr. Connelly: May we go off the record for a moment?

The Court Is it all right, Mr. Freed?

Mr. Freed: Yes.

(Discussion off the record.)

Mr. De Lone: If the court please, this morning the witness was shown Plaintiff's Exhibit 66 in a form somewhat different that the court's original copy. By agreement of counsel we would like to substitute the copy which was shown to the witness for the copy previously marked [fol. 569] Plaintiff's Exhibit 66 because it is a more complete copy.

The Court: Permission to substitute is granted.

By Mr. De Lone:

Q. Mr. Land, you averted in the course of your earlier examination to the decision on December 5, 1957, to permit Mr. Shanaman to sell some of the West Coast production, either to sell or to make arrangements with Olin

Mathieson at least involving the distribution of some 2,000 tons of sodium chlorate produced in Pennsalt's western plant.

Did that go forward in the year 1958? Did Olin handle some of the Pennsalt production from the West Coast?

A. Yes, they did.

Q. Did you participate in any meetings in the early part of 1958 when that subject or any other subject so far as sodium chlorate and Pennsalt and Olin were concerned, meetings now with Olin personnel, and I call your attention to Plaintiff's Exhibit 111, which I think you have before you.

A. Yes. This memorandum records a meeting held in Philadelphia attended by Mr. Drake, Mr. Shanaman and myself at which John Logan talked to us about a potential joint venture.

Q. The memorandum records at the beginning of the third paragraph:

> [fol. 570] "It is felt that neither OM nor Pennsalt should move in the chlorate or Perchlorate field without keeping the other informed and I——"
>
> Being Mr. Logan.
>
> "—agreed to do so."

Was there any agreement entered into at that meeting on February 3, 1958, which is reflected in PX-111, was there any agreement beyond the agreement or understanding to keep each other informed?

A. No, there was not. To the contrary, I think the feeling on Pennsalt's part, in fact I know the feeling on Pennsalt's part was if a project could be put together on Pennsalt alone we would at this time or at a later time do it as a Pennsalt project. I am sure Olin Mathieson felt the same way.

Consequently as a matter of courtesy we merely agreed not to continue joint operations or discussions if we had decided to go into the project individually.

Q. Does Mr. Logan's memorandum, as you have read it, accurately reflect the substance of what transpired at the meeting on February 3, as far as you remember?

A. It does, as far as I remember.

Q. Mr. Land, I show you a series of letters between you and Mr. F. C. Shanaman which are numbers PX-131, [fol. 571] 133, 135, 137, 138, and ask you if you can tell us what your understanding was of the mission of the Industrial Division East in the period 1958-1959 with reference to the sale of sodium chlorate produced by your West Coast facility at Portland, particularly in light of what you knew about the fact that Olin was also handling some tonnage from your western operation?

The Court: Read that question back.

(The last question was read by the reporter.)

The Court: All right.

The Witness: The mission of Industrial East with regard to sodium chlorate is based upon one sound factor of purchasing policy. We can supply material to a purchasing agent in the East on a sustained basis only if we are in a position to back up that supply with a producing facility in that geographical area.

What I am try to say is that it was not possible or profitable for us to sell chlorate from Portland, Oregon, the plant at Portland, Oregon, on a sustained basis unless we had plans to build a plant in the East. In December the decision had been made——

Q. December of what year?

A. 1957. The decision had been made that it was unlikely we could proceed on our own. Consequently there [fol. 572] was no incentive for the Industrial Division in the East to sell sodium chlorate.

I was also aware that Mr. Shanaman had made an arrangement with Mr. Logan to supply him with the material which was "surplus" from the Portland plant, so I consequently was not actively seeking sodium chlotate business in the East.

Q. Prior to December of 1957, the period since you have been in charge of the Industrial Division East, what if any sodium chlorate had you been selling during that period from 1955 to 1957 in the East?

A. I believe it was only Foley, Florida, and Manganese Chemical.

Q. The one in Florida, the other in Minnesota that we previously referred to?

A. Yes.

Q. Why is it that the customer would not purchase unless you had a plant in the East?

A. I believe it is a rather simple fact that while a purchasing agent normally regards two sources of supply as important to him he wants both sources of supply, or, in fact, if his only source of supply, if he chooses to buy from one company, to be in a position to service his account, to supply his emergency needs, and to supply him on a continuing basis.

If the supply is from a distance as far away as Port- [fol 573] land he recognizes immediately that his supplier can potentially find a place for that sodium chlorate closer to him in Portland. Consequently some time in the future he may not be in a position to buy. So to have a continuous source of supply, unless there is an emergency, a purchaser will insist that the supply come from his geographical area.

Q. In this period from 1958-1959, did Pennsalt Industrial Division East continue to handle these two accounts which had been developed back in 1955, that is, Foley, Florida, and the Manganese Chemical Company?

A. Yes.

Q. You mentioned earlier that following the end of 1957 Pennsalt's interest in perchlorate, ammonium perchlorate, become more active.

I show you PX-113, which is the press release, and though undated it is agreed it is approximately February 11, 1958, and ask if that plan announced there of a plant in the West Coast to make ammonium perchlorate is the first tangible evidence, if you will, of Pennsalt's interest, or is it something you went ahead and did in the ammonium chlorate field?

A. Yes. This announces the first really pilot plant installation at Portland, Oregon, to produce ammonium perchlorate. It also speculates that another plant might [fol. 574] be built in the South, and at this time I believe we had prepared estimates concerning a 6,000-ton ammonium perchlorate plant in the East. This was right at the initial phase of the interest in ammonium perchlorate.

Q. Did you become involved in any way in pursuing the subject of the demand for ammonium perchlorate?

A. Yes. While the plant at Portland, Oregon, would be the responsibility of Mr. Shanaman it was likely that if a plant were built in the East it would be the responsibility of the Industrial Division in the East, and hence my responsibility. Consequently on two occasions I believe I made trips with personnel from the Western Division to discuss the possibilities of ammonium perchlorate and the future of ammonium perchlorate with people in Washington.

Q. Was this with an eye to whether you as the Division Manager could recommend an ammonium perchlorate plant in the East or Southeast?

A. Yes. At this point if I could put together a project of ammonium perchlorate that looked reasonable, or a combination of the ammonium perchlorate and chlorate, certainly I was interested in doing so.

Q. You mentioned a combination of ammonium perchlorate and chlorate as a possibility.

Why did that seem to you a possibility that you [fol. 575] should pursue?

A. About one pound or a little over one pound of sodium chlorate is used in the production of one pound of ammonium perchlorate, so to the extent that you could sell ammonium perchlorate you were increasing the size of the plant that you needed to make sodium chlorate. Consequently this might be a base for obtaining a reasonable project for the Industrial Division.

Q. Were such objections as you had, did they show which of these two, the ammonium perchlorate or sodium chlorate, would be the more profitable?

A. Certainly we had not found anything in our studies that made sodium chlorate very profitable, so consequently if the combination was to be profitable ammonium perchlorate was going to have to carry more than its share of the profit responsibility.

Q. Mr. Land, I show you Plaintiff's Exhibit 122, a memorandum of Mr. Tuttle, of a meeting that you, among others, "L-14," attended April 21, 1958. He says there in regard to an ammonium perchlorate and other Pennsalt high energy endeavor the following was agreed upon,

the primary objective for going into perchlorates at this time is to facilitate the justification for chlorate manufacture in the South.

Is the chlorate manufacture in there a reference to [fol. 576] sodium chlorate?

A. Yes, it is.

Q. Does that accurately summarize the views entertained by the group at that meeting on April 22, 1958, so far as the reason for the interest of ammonium perchlorate?

A. In my opinion it does.

Q. Incidentally, who is D-11?

A. Mr. Drake.

Q. Did you subsequently, in the fall of 1958, give further consideration in the management group of Pennsalt to either sodium chlorate plant in the Southeast or to a sodium chlorate-ammonium chlorate combined plant, but still with Pennsalt alone involved? In that connection I show you Plaintiff's Exhibits 139, 141 and 142.

A. Yes. As Exhibit 139 shows, Mr. Drake asked us to determine where we are today and where do we go from here and when. This was prompted by the fact that at this time, September 26, 1958, we had completed the installation of the ammonium perchlorate pilot plant at Portland. The estimated use figures for ammonium perchlorate by the military were fabulous. Consequently, it was timely to see what part Pennsalt should plan in the ammonium perchlorate picture in the country.

Q. PX-141, notes of a meeting in October, 1958, appar- [fol. 577] ently of several days, concludes with an item, "Southern chlorate plant not discussed or included in the program at this time. Shanaman, Land, and LaLande, are to review October 27."

PX-142 suggests that you and Mr. Shanaman should get together and conclude what if anything we should do about chlorates in the Southeast.

Did you have any discussion of sodium chlorate, disconnected entirely from perchlorates at this time?

A. I don't believe there was any discussion in 1958 of a sodium chlorate plant by itself, and I believe these references of chlorate all refer to a combined chlorate and ammonium perchlorate plant.

Q. Did you and others with you then come to grips with the subject of a sodium chlorate-ammonium perchlorate plant for Pennsalt alone in the late fall of 1958? In that connection I show you a series of documents, which are PX-143, PX-146, a memorandum from Mr. Eastman to Mr. Sloan dated November 11, 1958, which I will ask the reporter to mark for identification as Defendants' Exhibit No. 1.

(Memorandum dated November 11, 1958, was marked for identification Defendants' Exhibit No. 1.)

By Mr. De Lone:

Q. I also show you PX-148, PX-149, PX-153 and PX-154. [fol. 578] I think they are all in the package which you now have before you, Mr. Land, is that correct?

A. Yes, I have them.

Q. That is a number of documents, and I want you to take your time to refresh your recollection to the extent that you need to from those documents and then just tell the court in summary form what it was that transpired within Pennsalt in this period of late fall 1958 with reference to its consideration of a sodium chlorate-ammonium perchlorate plant in the East or Southeast?

A. Exhibit PX-143 is the first of a series of meetings held on November 3, and the purpose for this meeting was really to set the stage for the meeting that is recorded—I beg your pardon, the November 3 meeting is the second meeting. The first meeting was October 22. The meeting on October 22 really set the stage for the meeting of November 3.

Q. The October 22 meeting is dealt with in PX-143?

A. Correct.

Q. And the November 3 meeting is dealt with in PX-146?

A. Yes.

Q. If you would try, when you go through these, when you refer to a document to indicate the exhibit number, it will help.

The Court: Where do you find the October 22 date? [fol. 579] Mr. De Lone: It is October 27, your Honor. I guess that was a slip of the tongue on the part of both of us.

The Court: Thank you.

The Witness: PX-146, which is the record of the November 3 meeting, records the general discussion and conclusions reached at this meeting to consider a joint chlorate and perchlorate plant by Pennsalt alone. I believe it shows on page 3 the action and timing agreed upon. It shows that the Western Division will initiate an appropriation request to expand its Portland plant, and it shows as item 2 that Mr. Drake would apprise the board of directors of this program. It goes on in item 3 to show what action is to be taken following that mentioned previously.

The exhibit that you have shown me as Plaintiff's Exhibit 153 represents the initial work done in connection with item 3, subparagraph (a).

By Mr. De Lone:

Q. Subparagraph (a) is at the bottom of page 3 of Plaintiff's Exhibit 146?

A. Correct. The first action to be taken after the Western Division proceeds to expand its plant, or to prepare an appropriation request, and Mr. Drake talks with the board of directors, is for Central Engineering to prepare an appropriation report for this plant.

[fol. 580] In the preparation of the appropriation request, as I have said before, we follow the procedure of essentially completing our engineering, transferring back to a division manager for his responsibility, so that he in turn can present it to the management committee and to Mr. Drake for presentation to the board of directors.

Before item A can be completed, it is necessary for the scope of the project to be delineated in sufficient degree so that the Engineering Department can prepare their estimates.

Mr. Tryson's letter to Mr. Woodard, shown as Plaintiff's Exhibit 153, is an engineering study which was given to me as Division Manager, which was to be used as the basis for setting the scope of the project, which would let them proceed with their final engineering. Actually we never got beyond this stage since, as Division Manager, I could not accept the figures as shown in this report.

[fol. 581] Q. When you say "this report", which do you mean?

A. Plaintiff's Exhibit 153. Due almost entirely to the fact that while the overall return shown in the report for a combined chlorate-ammonium perchlorate plant was perhaps sufficient to meet Pennsalt standards, the bulk of the weight, as far as profit potential, was shown in ammonium perchlorate.

By January of 1959 ammonium perchlorate had lost some of its glamor. We had been subjected to many fabulous estimates by all sorts of people in the military as to what the demands would be. I call your attention to DX-1, which records on November 11, 1958, a telephone call from Mr. Errol Karr, who was heading the sales program of ammonium perchlorate for the Western Division, reporting to us that there is a possibility that double accounting exists in the several estimates of future demand for ammonium perchlorate obtained from the rocket engine manufacturers. Consequently, we were using figures that were perhaps twice as great as they were going to materialize.

Also we had the problem inherent in all chemicals of this type, and being sold ostensibly to the Government, we had the problem that they might be subject to renegotiation. If they were subject to renegotiation, this would take a good deal of the profitability, as forecasted in the engineering statistics or reports, out of it.

[fol. 582] We also had the possibility that while the ammonium perchlorate—and I believe at this time it was being used ostensibly for the Minuteman, which you will recall is an intercontinental ballistics missile loaded aboard a train in constant motion across the country—that while there would be a substantial demand for ammonium perchlorate to fit this system, unless they were used there would be no repeat business for this particular missile.

The other use was for the Polaris, which is the missile that goes aboard submarines. While I don't know how many there are, the amount of material used to charge the missiles that go aboard the submarines after the test program is over and they become operational, you could find that ammonium perchlorate did not have the service length of time necessary to warrant an investment based primarily upon the return of ammonium perchlorate.

Now, while the figures had lost some of their glamor in this period, they certainly hadn't lost all of it to the extent

that Pennsalt was willing to retract from the field. We had a pilot plant at Portland, Oregon, and I belive at this time we went forward to expand our operation at Portland to 2,000 tons per year, which also looked like a reasonable participation for Pennsalt in the ammonium perchlorate market.

Consequently, as the Division Manager I could not again [fol. 583] find a project upon which I was willing to recommend to the management of Pennsalt for consideration of it as a project for the company.

Q. Mr. Land, I call your attention in PX 146 to the item you previously referred to, Item 3 at the bottom of page 3, "Mr. Drake will make final decision to authorize action and expenditures for Central Engineering Department immediately to design and engineer."

What is the expenditure we are talking about when we talk about designing and engineering a plant of this size? Is that the same expenditure that is indicated in paragraph A-6 on the first page?

A. $200,000.

Q. So that before this could get to the stage of being an appropriation request, that much engineering would have to go into it, do I correctly understand that?

A. It is entirely possible that it would be that high, that much money, and we would not spend moneys of this magnitude which would have to be approved by Mr. Drake, unless the scope of the project could be defined and it could be put together as a recommended appropriation for the Division.

Q. The next item after that A is B on page 4, which says, "Industrial Division immediately to plan, organize and undertake entry in the southern and eastern pulp and paper markets. The objectives will be the commercial sale [fol. 584] of product beginning in January, 19[illegible]."

Was that your responsibility as head of the Industrial Division?

A. Yes, sir.

Q. Did you do it?

A. I did not.

Q. Why not?

A. I would not do this phase of the program until Item A was completed, and I had a project that I knew was at

least going to be considered by the company as a project, and then I would only do A in a preliminary fashion until I knew we were going to go ahead with a combined project for Pennsalt.

Q. Was it decided at the meeting of November 11, 1958 that you were going to go ahead with the combined project, or that you weren't, or was it left open?

A. No decision was made in the meeting of November 11, 1958, other than to proceed with the steps we have just been talking about.

Q. I'm sorry, I have referred to that misleadingly as the meeting of November 11th. The meeting was the 3rd. The memorandum about it, PX 146, was November 11th. We are both talking about the same thing, I take it?

A. That is correct.

[fol. 585] Q. I call your attention to PX148, which is included in the list that I have given you. Under "Southern Chlorate Plant," it says: "Still under study. Progress report indicate action may depend on how much we are willing to gamble on future markets."

A. This minute, of coure, was made prior to the time that I had had a chance to review the figures with Central Engineering. So certainly at this state the project was still under study.

Q. Although that is labeled Southern Chlorate Plant, the second paragraph of that minute says "for the perchlorate part of the project." We are not talking about sodium chlorate alone, is that right?

A. I am sure that refers to a combined sodium chlorate-ammonium perchlorate plant.

Mr. De Lone: I will ask the Reporter to mark for identification as Defendants' Exhibit 2, a three-page document, the first page of which is a memorandum from Mr. Staples to Mr. Land, dated August 15, 1960, and the next two pages of which are a letter from Perkins McGuire, Assistant Secretary of Defense, to Mr. Karr.

(Three-page document was marked for identification, Defendants' Exhibit No. 2.)

[fol. 586] By Mr. De Lone:

Q. Mr. Land, in the course of your previous testimony you made reference to—I don't know what term you used—I think "glowing description" of the demands predicted by the government with reference to ammonium perchlorate. I show you Defendants' Exhibit 2, the memorandum from Mr. Staples to you enclosing a letter of the Department of Defense, which was apparently received in August of 1960. Does this as of that time indicate as definitively as you can obtain from any official soure, the then status of the demand for ammonium perchlorate?

A. Yes, sir. By August 15, 1960, I was Group Vice-President in Tacoma and responsible for the sale of ammonium perchlorate from the Portland, Oregon, facility. We were not having a great deal of success in moving the output of that plant, and it was a bit discouraging to have from Mr. Perkins McGuire, Assistant Secretary of Defense, the statement that it probably would be 1964 before their need for ammonium perchlorate exceeded the ability of the present producers to supply it, and then perhaps only on a temporary basis. He is talking in here about the possibility of stockpiling some material against that short-term need in 1964.

Obviously this was a bit discouraging to us since we had by this time built a plant at Portland, Oregon, and put it [fol. 587] into operation.

Q. What was the capacity of the ammonium perchlorate plant which you built in Portland, Oregon?

A. Two thousand tons per year.

Q. That was commenced about February, 1959, was it? In that connection I call your attention to Plaintiff's Exhibit 155, which is before you. That is the press release announcing it.

A. I believe that is the time that the authorization was made to commence building the plant. I do not believe it was ready to produce until later in the year 1959.

Q. I think it has been stated, and indeed stipulated, that the plant began production in October, 1959. That was prior, in any avent, to the date of this letter from Mr. McGuire?

Mr. Freed: Your Honor, I believe that on last Thursday we adopted a procedure under which counsel for the defense would identify stipulations or other matters referred to in order to clarify the record.

Mr. De Lone: I am informed, Mr. Freed, that the item is in an answer to interrogatories which has been offered in evidence by the Government. I will identify the precise one as soon as you want to. I do recall that it is in the record. I apologize for not having the precise reference.

Mr. Freed, do you want me to find that for you before we [fol. 588] go on?

Mr. Freed: I believe you referred to a stipulation. I don't believe there is any stipulation.

Mr. De Lone: I think I am wrong. I believe now it is in an answer to interrogatories which has been offered in evidence by the Government.

Mr. Freed: Would the Reporter read back Mr. DeLone's statement?

(The Reporter read the question asked by Mr. DeLone as follows:

> "Question: I think it has been stated, and indeed stipulated, that the plant began production in October, 1959. That was prior, in any event, to the date of this letter from Mr. McGuire?")

[fol. 589] Mr. De Lone: I am sorry. I am in error, Mr. Freed. It was not a stipulation, it is Plaintiff's Exhibit 390, which is Pennsalt's answer to interrogatories, Set 5, answer Number 83.

By Mr. De Lone:

Q. Mr. Land, calling your attention now to the period in the latter part of the year 1959, and showing you documents PX-172, 173, and 174, will you tell us, as you recall it, what occurred at that time to bring about further consideration of the subject of chlorates in the east so far as you were concerned?

A. Yes. By the end of 1959 the amount of material available at Portland had been materially reduced, in fact Mr.

Shanaman was telling me he would not be able to supply sodium chlorate for the customers that we were supplying in the east. He was also questioning whether or not we should continue the introductory program with Olin Mathieson unless we had serious intentions of going ahead with the joint project; and, consequently, this line of thought prompted Mr. Drake to ask us to get together again to see whether or not Pennsalt had an interest in sodium chlorate-ammonium perchlorate as a project.

In preparation for this discussion or meeting I wrote a [fol. 590] letter of December 30 to Mr. Drake, which is Plaintiff's Exhibit 174.

Q. What eventuated following this consideration reflected in Plaintiff's Exhibits 172, 173, and 174?

A. Actually the discussion that we had at this time certainly prompted us to either go forward with our joint venture with Olin Mathieson, or, indeed, as I suggest in my memorandum, stop the introductory sales program to them since Mr. Shanaman says he can sell it all at Portland, Oregon.

Shoraly after the end of December, and I believe it was early in January of 1960, I talked with Mr. Block concerning a meeting between him and Mr. Drake to discuss the possibility of a joint venture with Olin Mathieson.

Q. In your discussions with Mr. Drake or Mr. Shanaman which were precipitated by Mr. Drake's memorandum of November 17, 1959, if you had such discussions, did you discuss or consider a sodium chlorate-ammonium perchlorate project for Pennsalt in the east by itself, or singly with its own plant?

A. At the time or this point I could not find a suitable project for Pennsalt, and I am sure I did not recommend such a project, nor can I recall discussing it.

Q. Am I correct in understanding the focus of the dis- [fol. 591] cussion was the problem of whether there would be continued sales of sodium chlorate produced in the west to Olin, or what was going to happen so far as sodium chlorate was concerned?

A. "What was the purpose of these sales?" "Why should they be continued?"

Q. Subsequent to the—You said you had a telephone call in early January from Mr. Block of Olin?

A. That is correct.

Q. You talked with Mr. Block?

A. Yes.

Q. For what purpose? What was the conversation, that you remember?

A. I am not able to recall exactly what started this series of conversations. What I do remember was that a meeting had been proposed, I belive by Mr. Block, or discussions with Mr. Drake in the early part of January and Mr. Drake——

Here again I think it was because of complication of a board meeting early in January.

—asked me if I would call Mr. Block, and suggest that I substitute for him and that I meet him in Baltimore or New York at his convenience to discuss the possibility of a joint operation. I called Mr. Block.

[fol. 592] Q. When you say "joint operation," will you clarify it? We have got two: one is Olin Mathieson and Pennsalt doing something together, and another is Pennsalt doing a plant which makes two products, sodium chlorate and ammonium perchlorate.

A. Discussions with Mr. Block were obviously a joint arrangement between Olin Mathieson and Pennsalt.

My conversation with Mr. Block was quite brief. He mentioned to me that he felt that a meeting would be unproductive unless Mr. Drake were present since Mr. Drake would have to make the decision as to what Pennsalt did; and he felt that for that reason we should not get together at that time but to defer it until a later date in January when Mr. Drake was available.

I determined that such a date was, I believe, the third week in January and arranged with Mr. Block and Mr. Drake to meet.

Q. Did you yourself attend a meeting in the offices of Olin Mathieson in New York on January 21, 1960, and in this connection I show you Plaintiff's Exhibit 186.

A. I attended a meeting which was held January 21, 1960.

Q. Will you read the memorandum which I have shown you from Mr. Clem, and tell us if that reflects as accurately [fol. 593] as you can remember the substance of what transpired at the meeting?

A. It does.

Q. When was it, Mr. Land, that you were transferred or when you physically moved from the east coast to the west coast with your new responsibilities? It started sometime in 1960?

A. About January 15, I knew I was to be transferred to the west coast; and I believe my first actual time on the west coast was March 19, 1960. But by the date of this memorandum, Plaintiff's Exhibit 186, I know I was to be transfered to the west coast.

Q. Did you participate in any further discussions following this meeting of January 21, 1960, with reference to the development of a letter of intent concerning Penn-Olin?

A. I had nothing to do with Penn-Olin since the date of this meeting.

Q. During the entire period from 1955 to 1960 when you were the manager of Pennsalt's Industrial Division in the east did your division ever present an appropriation request for the construction of a sodium chlorate plant at any location east of the Rocky Mountains?

A. We did not, nor did we have a plant suitable for consideration, final consideration, in the division.

[fol. 594] Q. Did you ever present an appropriation request for an ammonium perchlorate plant east of the Rockies in the same period?

A. We did not.

Q. What about a request for an ammonium perchlorate-sodium chlorate combined plant to be built by Pennsalt alone?

A. We did not.

Q. You never presented an appropriation request. Did you ever recommend that any of the projects, those three I have just referred to, should be included in the company's program for growth?

A. We had no recommendation.

Q. You had none. Did you make any?

A. We made no recommendation in this direction.

Q. Were any such projects ever included in the company's program for growth?

A. They were not.

Mr. De Lone: No further questions.

Mr. Freed: I wonder if we might recess for lunch at this time?

The Court: Recess until 2:00.

(At this point the trial was recessed, to reconvene at 2:00 p.m. the same date.)

[fol. 595] 2:00 o'clock p.m., the same day.

PRESENT:

As before noted.

Mr. Freed: Your Honor, it was the understanding of Government counsel that the documents which were introduced or which were discussed by the witness this morning were going to be maintained in the form in which they were submitted and left on the desk, but apparently we had a misunderstanding with the defense counsel.

If we could have your indulgence for a few minutes we would pull those documents.

The Court: How much time do you want?

Mr. Freed: Probably five minutes.

(At this point a short recess was taken.)

HUGH C. LAND, resumed.

Cross-examination.

By Mr. Freed:

Q. Mr. Land, in your direct testimony this morning I believe you stated that some of the sales which Pennsalt [fol. 596] has made in the East since 1955 were made as a favor to the customer.

Did you mean by this that Pennsalt has made such sales for charitable purposes, or as a gift?

A. No.

Q. Can you tell us what you did mean when you talked of sales as a favor?

A. Obviously "sales as a favor" is a poor choice of words. Procter & Gamble had their own equipment which

they wanted to put into service for the shipment of sodium chlorate to Foley, Florida. This requires a substantial amount of freight equalization for Pennsalt. We then considered doing this because of our relationship with Procter & Gamble over the years. We considered their request to do this job.

Q. If I understand you correctly the sales which have been made by Pennsalt to Procter & Gamble at Foley, Florida have been made in the exercise of Pennsalt's judgment for sound business reasons. Is that correct?

A. That is correct.

Q. In furtherance of Pennsalt's over-all effort to secure profit and return to the shareholders?

A. That is very true.

Q. I believe you also testified this morning that as of now Pennsalt could dispose of all its sodium chlorate capacity, [fol. 597] production at capacity, in the 11 western states. Is that what you testified to?

The Court: Before you get on that, was the testimony on direct examination to which you are cross-examining or your cross-examination is directed in a general way, and as to which you—this is a rather specific response to Foley, Florida. Is that the only testimony covered by this customer favor attitude?

It was my recollection, and correct me if I am wrong, that it also covered the Michigan shipment, and possibly some other Eastern shipments, but I could be wrong about it.

The Witness: I believe I was referring under "customer favor," to Foley, Florida, P&G.

By Mr. Freed:

Q. Could you tell us whether any of the sales which Pennsalt has made in the East of sodium chlorate, from the time it first began to ship sodium chlorate to the East until today, have ever been made for purposes other than in furtherance of Pennsalt's attempts to secure a profit and return a favorable return to its shareholders?

A. I am sure there are no other reasons.

Mr. Freed: Would the reporter read back the question with respect to sales in the 11 western states?

[fol. 598] (The reporter read the question as follows:)

"Q. I believe you also testified this morning that as of now Pennsalt could dispose of all its sodium chlorate capacity, production at capacity, in the 11 western states. Is that what you testified to?"

By the Court:

Q. Again, before you get to that, I want to see if I understand your testimony about these Eastern shipments, Mr. Land.

I suppose that if you sold, theoretically this is, at a loss every time you shipped East to very good customers it might be a sale in the interest of over-all profitable operation?

A. That is true.

Q. What I want to get at is what the fact is.

Were you selling at a loss, or were you selling at profit which would be less than you would normally expect to receive in the interest of developing good will for other profits, or were all of your sales to the East standing alone, that is sales of sodium chlorate, on a profitable basis, or is that a question that is too general for you to answer?

A. No. I think you can say that generally the sales of sodium chlorate to the East from Portland were not sales at a loss. However, they were less profitable sales than [fol. 599] could have been made from Portland into the logical selling area from that plant, the nominal 11 western states.

As we expand our plant at Portland, and it is expanded in increment, you have during some periods tonnage of production which you can move further than your normal marketing area. Under these conditions you attempt to sell them wherever you can sell sodium chlorate.

Q. In a sense it is distress production?

A. Incremental production. Yes.

So that now Proctor & Gamble had a little different flavor in that they were big customers of ours in the East. They had said to us, We would like to have this shipment into Foley, Florida," and we agreed to fill their car.

I might add this is the only customer's car that we filled in the United States, the rest of the delivery equipment is ours. It is a little unusual only in that context.

By Mr. Freed:

Q. Mr. Land, you have just referred to the sales to the pulp and paper customer known as Buckeye down in Florida. You stated that that is the only customer which furnishes its own car, is that correct?

A. As far as Pennsalt and the West is concerned, that is correct.

[fol. 600] Q. With reference to your sales to the two other pulp and paper companies in the East to whom sales were made, according to your testimony this morning, namely, Union Bag Camp and Gulf States Paper Company, in whose car were Pennsalt's shipments of sodium chlorate from Portland, Oregon, to those Eastern points made?

A. Made in Pennsalt's delivery equipment.

By the Court:

Q. Were they bulk sales?

A. They were bulk sales.

Q. Union Bag-Camp, was that a shipment into Virginia?

A. I'm not just sure. Where was it—Virginia?

Q. That was my recollection of your testimony, but again I may be confusing it with something else. How about Gulf States?

A. Yes, Gulf States is the other paper mill. I think counsel read the state as well as the tonnage.

Mr. Freed: Your Honor, in Plaintiff's Exhibit 274, which is a Sodium Chlorate Market Appraisal and Penn-Olin Marketing Projection, there is an appendix at page 15 which lists sodium chlorate customers, and Union Bag-Camp Paper Corporation is listed as being located at Franklin, Virginia.

By Mr. Freed:

Q. And Gulf States Paper Corporation shipments were [fol. 601] made to its plant at Demopolis, Alabama, is that correct, sir?

A. Yes.

Q. You testified, I believe, that at least with reference to the Union Bag sale, that that sale was made by your western sales manager, Mr. Shanaman?

A. I believe he is the contacter.

Q. And he secured that as a personal favor?

A. That's correct.

Q. In other words, this was another sale made in furtherance of Pennsalt's over-all marketing activities in an effort to dispose of its sodium chlorate?

A. Correct.

Q. Was this an effort to dispose of the sodium chlorate at a loss? Do you know that, sir?

A. Not at a loss, no, sir.

Q. Returning now to the question of Pennsalt's ability at the present time to dispose of all of its sodium chlorate production on the West Coast, is it your testimony that as of the moment Pennsalt is able to sell the full production of its plant, operating at capacity, in the 11 western states?

A. Mr. Freed, I think the question was worded better the first time. You left out the word "capacity" this time, and this makes a difference in the answer. I am not attempting to hedge.

[fol. 602] We can sell the capacity of our Portland, Oregon, plant in the 11 western states, or the geographical area surrounding it. You should include the Chipman shipments which were just outside the 11 western states. And I am differentiating here between capacity of the plant and maximum production. We can operate at above capacity, as it is used in our industry, although you do it at the sacrifice of economics in your operation.

The Court: Your testimony is that you have a market where you could dispose of your capacity but not the full production?

The Witness: That is correct. Your capacity is a rated figure in chemical plants where optimum yields are obtained from its process. You can run at what we call 110% of capacity and you do so at the sacrifice of operating economy. So if you have a period where you need additional production you can run for short periods of time at above capacity of operation.

The question I answered this morning was, could I sell the capacity of Portland, Oregon in the 11 western states, or its environs, the natural marketing area from Portland, and I believe the correct answer is yes.

By Mr. Freed:

Q. Then in referring to capacity, in response to Mr. [fol. 603] DeLone's question this morning, you were referring solely to the rated capacity of your plant, is that correct?

A. That is correct.

Q. What is that capacity?

A. It is about 15,300 tons per year.

By the Court:

Q. What can you produce when you are stretching it?

A. The maximum is about 17,000 tons. There is a differential there of about 1700 or 2,000 tons.

Q. In the normal course of a very busy operating year, what percentage of the time would you exceed your rated capacity, or can you exceed your rated capacity with reasonable safety?

A. Your problem of operating at rated capacity is one of supply to your customers. We have a general policy within Pennsalt that at any time a process runs at more than 95% of capacity you should immediately commence plans to expand it, because if you run at above rated capacity and you have a demand in your area that you can't supply, then you are not regarded as a reliable supplier. So you have a danger of running at rated capacity because it impairs your ability to produce economically.

Q. I don't think you quite answered my question. I'll asked the reporter to read it.

(The reporter read the last question.)

[fol. 604] A. I can't give you a precise answer. However, in sodium chlorate you can run at 10 or 15% above capacity for a period of four or five months, without danger.

Q. That is, without physical damage to your operation, but without the economies in the cost of production which otherwise you would experience?

A. You would have some physical damage at running at this rate of operation, and this is in terms of anode life. You would have to replace the anodes faster. The containers would have to be replaced faster. But in the op-

erating life, these elements are all replaced at some point in time. So you are accelerating the time that they would have to be replaced.

Q. How about the cost of production where you exceed your rated capacity?

A. The cost increases.

By Mr. Freed?

Q. Do your costs increase to the point where it is against the best interests of Pennsalt to produce and sell above its rated capacity?

A. At some point, and it is very difficult to say just where that point is.

Q. Has that point been reached up to the present time?

A. I don't believe so.

[fol. 605] Q. Then all of the sales which Pennsalt has made from the time its Portland, Oregon, plant commenced production until the present time have been production for sales at a profit and in the best interests of Pennsalt's business, is that correct?

A. You are asking me to comment upon a 20-year period, and it would be very difficult for me to do.

Q. If we confine it then to the year 1956, would that statement be true?

A. Again I perhaps can only comment upon the year 1960, from my own personal knowledge, Mr. Freed.

Q. And with reference to that year?

A. I would say the answer is yes.

Q. Are you familiar, Mr. Land, with the extent to which Pennsalt has in fact operated above or below its rated capacity within the past five years?

A. No, not in any detail.

Mr. Freed: I would like to read into the record at this point the data stipulated to by the parties contained in Plaintiff's Exhibit 376, page 4, which is entitled, "Sodium Chlorate Data Table No. 4," and in the column headed "Production" there are figures given for the production by Pennsalt at Portland, Oregon as a percentage of the capacity of Pennsalt's plant, and the figures are as follows——

[fol. 606] Mr. De Lone: Is this for the purpose of some

further examination of this witness? If not, I object to it. It is already in the record.

The Court: Address your observation to the court.

Mr. De Lone: I object to reading this into the record. If it is an exhibit it has already been offered by the Government.

The Court: Is that a preface to a question?

Mr. Freed: Yes, it is.

Mr. De Lone: I withdraw my objection.

By Mr. Freed:

Q. In the year 1957 Pennsalt's production was 107.4% of capacity; in the year 1958 Pennsalt's production at Portland, Oregon, was 106.9% of capacity; in 1959 it was 109.4% of capacity; and in 1960 it was 110.3% of capacity.

Can you tell us, Mr. Land, whether Pennsalt presently is continuing to operate its Portland, Oregon plant in excess of rated capacity?

A. Yes, we are.

The Court: I do not want to destroy the effectiveness by what I am going to ask, and you just retort that you would rather not answer the question at this moment if it does in any way impair your effectiveness, the effectiveness of your cross-examination.

[fol. 607] What is the significance you draw from that? It seems to me that obvious significance is that Pennsalt needed some additional capacity, or the obvious significance is that the rated capacity is not a very significant figure, and the productive capacity is more revealing.

Do you prefer not to answer that now?

Mr. Freed: No, your Honor. In the Government's view both of your Honor's observations are true.

By Mr. Freed:

Q. Mr. Land, in light of the testimony in the record concerning Pennsalt's production in excess of rated capacity, and in light of your further testimony with respect to Pennsalt's ability to sell its rated capacity production in the 11 western states, can you tell us whether Pennsalt contemplates abandoning sales outside of the 11 western states now that Penn-Olin has come into production?

A. The obvious one we will abandon is the sale to Penn-Olin, which is going on this year; other than that we do not intend to abandon.

Q. Does Pennsalt have any present intention of abandoning its sales to Buckeye at Foley, Florida?

A. I do not believe there is any present intention of abandoning it. I had considered abandoning it several years ago, but this is now the project of Jim McWhirter. If he con-
[fol. 608] tinues to sell Foley, Florida we will continue to supply him.

Q. Would your answer be the same with respect to the sales of Gulf States?

A. Yes.

Q. And with respect to sales to Union Bag would your answer be the same?

A. Yes.

Q. Pennsalt intends to continue, insofar as the customer will buy from it, continue to sell sodium chlorate to those Eastern pulp and paper customers?

A. When you say "continue," you mean as of tomorrow or next year?

Now there will come a point in time when I can sell this material within the normal marketing area, when I will then be in a position to say to our people who are marketing in the East, "We no longer have material available for you," and it becomes a decision as to whether or not we ship to the East at some sacrifice in profit.

Q. But until that point is reached your testimony is that you will continue to make sales wherever you are able to in order to dispose of the full possible production of your Pennsalt plant at Portland?

A. Mr. Freed, the division manager at Tacoma, Washington, has a responsibility for profit from operating the plant
[fol. 609] at Portland, Oregon, and consistent with that he will attempt to sell that material wherever he can.

Q. Does that answer apply to the sale of production in excess of rated capacity?

A. There is a limit at that point. How far we go beyond our logical market area depends upon the availability of material. As we increase above rated capacity our cost increases, so you find an economic balance on how far you move material.

Q. At least to the extent that production has taken place in excess of capacity to date have you reached the limit?

A. You mean up to 10% over rated capacity?

Q. Yes.

A. No. Depending upon how far we have to ship it and how much freight equalization we have to take.

Q. In other words, how much further than 110% of capacity you would wish to produce, and how much additional sales you might want to make outside of the 11 western states is the question which has not yet been presented to Pennsalt, you can only testify that the amount of production to date and the sales in the East to date have not exceeded your——

The Court: I am not sure I understand that question. Will you restate it?

[fol. 610] Mr. Freed: Perhaps I had better withdraw the question and start again.

By Mr. Freed:

Q. I believe you qualified your answer with respect to the sale of production up to Pennsalt's rated capacity in the 11 western states by saying that such sales would also include those outside the area to Chipman in Texas and Minnesota. Is that correct?

A. That is correct.

Q. Would such sales at rated capacity also include those to Manganese Chemicals in Minnesota?

A. No, it would not.

Q. Are there any sales outside of Texas and Minnesota, outside of the 11 western state area that Pennsalt would have to make in order to sell at the moment its rated capacity out of Portland?

A. No, it would not.

Q. Mr. Land, is it correct that in the year 1960 you indicated that you wished to have the right on behalf of Pennsalt's industrial division West to sell up to 3680 tons of sodium chlorate in the East? Do you recall that?

A. I do not remember the exact figure of 3680, but I know we gave a range between 1,000 and 3,000, so that is fairly close.

[fol. 611] Mr. De Lone: Is that an exhibit you are making reference to?

Mr. Freed: Yes, 234.

By Mr. Freed:

Q. Mr. Land, I have shown you a copy of Plaintiff's Exhibit 234, which is a memorandum to the file from Albert H. Clem, dated June 16, 1960.

Who is Mr. Clem?

A. Mr. Clem is the Vice President in charge of marketing for Pennsalt.

Q. Does Mr. Clem also occupy a position in Penn-Olin Chemical Company?

A. He may. I am not sure.

Q. Do you recall that Mr. Clem is one of the board members of Penn-Olin?

A. Yes, I belive that is correct.

Q. In this memorandum to the file Mr. Clem states as follows:

> "Hugh Land advised me from New York today that during the calendar year 1961 Portland can supply a minimum of 1680 tons of sodium chlorate to the southeast. This would be 1,000 tons plus 580 tons to Buckeye, plus 100 tons to Union Bag. Portland would like the right to supply 3680 tons which would be 3,000 tons [fol. 612] plus 580 tons to Buckeye, plus 100 tons to Union Bag."

Does that refresh your recollection with respect to the request you made concerning a right on the part of Pennsalt to furnish sodium chlorate for sale in the East?

A. Yes, I believe that is correct. And the only difference between my 1,000 and 3,000 and your 1680 and the 3680 is the additional material for Buckeye Cellulose and Union Bag. I had included them in my initial comment.

By the Court:

Q. Who would be the potential customer for the thousand tons?

A. This would be Penn-Olin. They wanted some material to use prior to the start up of the production facility at

Calvert, and the reason for the spread and the reason for some fluctuation in these figures, sometimes it is our inability to forecast just how much sodium chlorate we would use in the production of ammonium perchlorate at Portland. So we wanted to say here that if we could use the sodium chlorate and produce ammonium perchlorate then we wouldn't be obligated to supply it to Penn-Olin; if we had it available we wanted the right to supply it to them.

That is the essence of this thing.

Q. What stock brokers call a "put?"

[fol. 613] A. Yes.

By Mr. Freed:

Q. Mr. Land, do you recall in fact how much sodium chlorate your plant in Portland, Oregon supplied to the East in the year 1960?

A. Generally it is in the area of 2700 tons because we were not very successful in making ammonium perchlorate.

By the Court:

Q. You are talking about supplying 2700 tons?

A. In 1960.

Q. In 1960 that is. That is the year when the production was exceeding the rated capacity?

A. By 10%, sir.

Q. So that you elected as between the choice of keeping within rated capacity and exceeding rated capacity to exceed rated capacity and seek a market in the East?

A. To supply Penn-Olin, who was then building a plant and getting ready to operate, yes.

Q. Penn-Olin was actually selling sodium chlorate prior to the time when it became—its production facilities were ready for the purpose?

A. Yes. Penn-Olin sold during the entire year 1960 and only material supplied by us from Portland, Oregon, until their plant went into operation.

[fol. 614] The Court: What is that date of the letter of intention, 1959 or 1960?

Mr. Freed: 1960.

By the Court:

Q. You mean literally Penn-Olin was selling in 1960 before the letter of joint intention for the joint venture was entered into?

A. No, I do not.

By Mr. Freed:

Q. Mr. Land, I believe your last answer in response to a question from Government counsel was with respect to the sales by Pennsalt of sodium chlorate in the East in 1960, and your answer was that the total tonnage was in the 2,000 range?

A. I think it is 2,700 tons to Penn-Olin. I understood your question to be to Penn-Olin. It would be the addition of material for Buckeye Cellulose and Union Bag, in addition to that sold to Penn-Olin, in the neighborhood of 3,300 or 3,400 tons.

Q. I direct your attention, Mr. Land, to Plaintiff's Exhibit 414, entitled "General Stipulations, Set One", in which the table marked "Stipulation, Table No. 4" shows that in the year 1960 Pennsalt shipped on behalf of Olin 3,228 tons.

The Court: On behalf of Olin or Penn-Olin?

[fol. 615] Mr. Freed: The chart is headed on behalf of Olin.

By Mr. Freed:

Q. I wonder, sir, if you can explain to us the difference between the 2,000-plus tons which you have stated were sold to Penn-Olin and this 3,228 tons which are listed in Table 4?

A. I am sure Table 4 is correct. I would let it correct my testimony.

Q. Can you tell us, Mr. Land, whether the sales which are recorded in Table 4 of Plaintiff's Exhibit 414 are in fact sales made to Olin for resale by Penn-Olin?

A. I can only say that they are sales made to Olin Mathieson.

Q. Do you know how they fit in with your prior testimony of sales made by Pennsalt to Penn-Olin?

A. I must have been incorrect in my prior testimony. Let's rely upon the written record.

Q. Were they sales, as far as you know, made to Olin Mathieson as a consumer of sodium chlorate?

A. No. I am sure they were made to Olin Mathieson either as a part of the test program or to be used as the pre-entry of Penn-Olin into the market, and I can't be sure just when the transition was made. I should rely upon the written record.

[fol. 616] Q. In fact, then, the desire which you had to have the right to sell a large tonnage of sodium chlorate in the East, in the year 1960, was fulfilled to the extent at least of 3,200 tons?

Mr. De Lone: I object to the form of the question: "A large tonnage."

The Court: Are you objecting to the form of the question?

Mr. De Lone: I object to the characterizing.

The Court: All right. Restate the question, Mr. Freed, unless you insist on this particular form. If you do, I will hear you.

By Mr. Freed:

Q. Is it correct, sir, that the 3,200 tons sold by Pennsalt to or through Olin in the East, in the year 1960, were a measure of the extent to which you were successful in securing the right to sell your sodium chlorate in the East in that area?

A. It is.

Mr. Freed, may I have one question for a minute? The figure that I am talking to you about, which is in this document you handed me, Plaintiff's Exhibit 234, talks about the right for sales in 1961. It is in 1961 that I am talking about selling 3,680 tons. You have shown me on this exhibit fig-[fol. 617] ures for the year 1960. Perhaps I am being confused as to how they relate.

Q. Pardon me. I did not realize the difference. Can you tell us with respect to the year 1961 the extent to which Pennsalt has in fact made sales under its claimed right?

A. I think 2,700 tons would be more factual.

Q. Mr. Land, I believe you testified this morning that Pennsalt has one salesman in the southeast, is that correct?

A. In 1955 we had Bob Wurst at Atlanta.

Q. How about in the year 1961? How many salesmen does Pennsalt have in the Southeast?

A. I can't testify from my own knowledge in 1961. I can only say that Bob Wurst has been replaced by Mel Binns in the Atlanta office.

The Court: Are you talking about the number of salesmen for sodium chlorate, Mr. Freed, so there is no misunderstanding by the witness?

Mr. Freed: My question is directed to the number of salesmen for Industrial Chemicals in the Southeast.

By Mr. Freed:

Q. Is it correct that it is salesmen from the Industrial Chemicals Division East who sell whatever sodium chlorate there is to sell in the East?

A. That's correct, and the only difference it would make [fol. 618] between 1955 and 1961 is that in between those two periods we merged the Sharples Chemicals Division with the Industrial Chemicals Division, and to the extent that we sold chemicals for the rubber industry in the South there may be a rubber chemical salesman down there. I can't be sure whether he is serving the Southeast.

Q. When you speak of the Southeast, can you tell us which states you are referring to?

A. I am referring generally to Alabama, Mississippi—the area of Alabama, Mississippi, Georgia, Louisiana—this general area.

Q. Those four states?

A. In that general area. It would include Arkansas.

Q. Are you familiar, Mr. Land, with the definition of Southeastern States which Pennsalt has incorporated in its response to interrogatories in this case?

A. I don't remember it, if that is what you mean. I am sure I have seen it.

Q. I call your attention to Plaintiff's Exhibit 380, which includes interrogatory number 12, propounded by the Government, and the response thereto by Pennsalt, in which the Southeastern states are defined as Texas, Louisiana, Kentucky, Florida, Georgia, North Carolina, South Carolina, Virginia, West Virginia, Alabama, Mississippi, Arkansas, Kansas, Missouri, Tennessee and Oklahoma. By letter [fol. 619] dated some time in late October, October 20, 1961, Pennsalt amended this definition of Southeast to delete half of Texas, Missouri and Kansas.

Now, addressing yourself to the Southeastern area as defined by your company, do you know how many salesmen the Industrial Chemicals Division has?

A. There is a salesman in Texas, so we would have to call him a half a man because he covers all of Texas, I guess. I believe then we would have two industrial salesmen.

Q. I take it Mr. Land that you are not familiar with Pennsalt's response to interrogatory 87, which requested a listing of Industrial Chemicals Division's sales force in the South?

A. I am not familiar with it. It was prepared in Philadelphia.

Q. I read to you now from Plaintiff's Exhibit 384, interrogatory 87, which states:

> "Pennsalt's sales force for the sale of Industrial Chemicals by the Pennsalt Industrial Chemicals Division East is as follows:
>
> "Atlanta, Georgia, office opened August, 1960, number of salesmen, 2, covering the states of North Carolina, Eastern Tennessee, South Carolina, Alabama, Georgia and Florida."

[fol. 620] Is that information correct, to the best of your knowledge?

A. It must be a rubber chemical salesman included in Atlanta, Georgia, to make up two. If it is, it is correct.

Q. Do you know for a fact that this includes a rubber chemical salesman?

A. I do not know that. I do know that in 1955 there was one.

Q. With reference to the Chicago office, the interrogatory states that there are five salesmen and that the territory of the Chicago office includes Eastern Kentucky. Do you have any information that would make that answer incorrect?

A. No, I think that is correct.

Q. With reference to the Philadelphia office of Pennsalt, the response by Pennsalt states that there are three salesmen working out of that office and that the states covered include Delaware, Maryland and Virginia, also Eastern Pennsylvania and Southern New Jersey. Do you have any information that would indicate that that information is incorrect?

A. I have none.

Q. There is also a sales office listed in this interrogatory [fol. 621] at St. Louis, Missouri, which has three salesmen. The states covered are Western Tennessee, Western Kentucky, Southern Illinois, Missouri, Arkansas, Mississippi, Louisiana, Kansas, Texas and Oklahoma. Do you have any information that would indicate that Pennsalt's response with respect to the St. Louis office is erroneous?

A. I have none.

Q. Finally, the interrogatory indicates that there are two salesmen of Pennsalt in its Pittsburgh office, which covers the states of West Virginia, Western Pennsylvania, and Eastern Ohio. Is that answer correct to the best of your knowledge?

A. That is correct.

Q. And in addition to all of the sales offices the interrogatory lists 7 people based in the Philadelphia home office of Pennsalt who are stated to have selling responsibilities in connection with the sale of industrial chemicals by Pennsalt's Industrial Chemicals Division East. These are people headed by Mr. Grogan. Is that information correct, to the best of your knowledge?

A. I believe that is correct.

Q. Mr. Land, I would like next to direct your attention to Plaintiff's Exhibit 66, which was shown to you this morning by Mr. De Lone. It is a memorandum dated March 8, [fol. 622] 1955 from Mr. A. S. Woodard to Mr. W. P. Drake.

A. Yes, sir.

Q. I believe your testimony this morning was that the cost estimates and return on investment figures shown in this memorandum were unfavorable in terms of Pennsalt's return on investment policy, is that correct?

A. That is correct.

Q. Directing your attention to the figures which relate to a 12,000-ton per year sodium chlorate plant in the East, the figures show, do they not, that Pennsalt could expect a return on investment between 10 and 15%. Is that correct?

A. That is correct.

Q. The investment listed on this cost study for a 12,000-ton plant would range between $3,560,000 and $4,773,000, is that correct?

A. That is correct.

Q. The return on investment at the 10% lower limit would indicate a profit per year to Pennsalt of $356,000 if the total cost of the plant were the lower figure of $3,560,000. Is that correct?

A. That is correct.

Q. And if the return on investment were as high as 15%, Pennsalt would show a profit on a 12,000-ton plant of $529,000, is that correct?

[fol. 623] A. Yes, sir.

Q. If on the other hand the plant cost the upper limit, according to this survey, of $4,773,000, it would indicate that Pennsalt could expect to receive a profit of between $477,300 and $715,950. Is that correct if my arithmetic of multiplying 10% and 15% is correct?

A. I assume it is.

Q. Then it is your testimony that the profit figures which I have multiplied out, between $350,000 per year and $715,000 per year were all within a range which was not suitable to Pennsalt in terms of its own return for investment policy, is that correct?

A. That is correct.

Q. In other words, these figures did show that Pennsalt could make a profit in the amounts that I have indicated but that that profit was not enough profit, is that correct?

A. That is correct.

Q. Mr. Land, two years after the cost estimates shown in Plaintiff's Exhibit 66, which is the March, 1955, document, new cost estimates were prepared and summarized in Plaintiff's Exhibit 82 which you have before you, dated March 12, 1957.

A. Yes.

Q. Is that correct?

A. That is right.

[fol. 624] Q. These estimates concerned plants of 15,000 and 20,000 ton capacity at Calvert City, Kentucky. Am I correct?

A. That is correct.

Q. Now, turning your attention to page 2 of Plaintiff's Exhibit 82, the net profit projected for a 15,000-ton Pennsalt plant at Calvert City would be $547,776 per year. Is that correct?

A. That is correct.

Q. That would represent a return on fixed investment of 13%, or on total investment of 11.4%. Is that correct?

A. That is correct.

Q. These figures were computed exclusively on the basis of an independent venture by Pennsalt. Is that right?

A. That is right.

Q. Directing your attention next to page 4 of Plaintiff's Exhibit 82, the data shown at top of page 4 is for a sodium chlorate plant of 20,000-ton capacity at Calvert City. Am I right?

A. You are right.

Q. And the net profit projected there is $850,716 per year. Is that correct?

A. That is correct.

Q. A profit in that amount would represent a return on total investment of 14.1%, and on fixed investment of 16.1%. Is that correct?

[fol. 625] A. That is correct.

By the Court:

Q. These figures are all before Federal income tax?

A. All before Federal income tax.

The Court: Plaintiff's Exhibit 82.

By Mr. Freed:

Q. Am I correct, Mr. Land, that following recipt of this report entitled, "Sodium Chlorate Plant in the East Report, Part 1," which is embodied in Plaintiff's Exhibit 82, the management of Pennsalt decided to proceed with a further study of the sodium chlorate market potential in the East? Is that correct?

A. That is correct.

Q. It was following this report and the figures contained in it that Arthur D. Little was hired to survey the market for sodium chlorate in the East. Is that right?

A. That is correct.

Q. At least as of March, 1957, the profit shown in Plaintiff's Exhibit 82 and the return on investment figures shown in Plaintiff's Exhibit 82 was not considered discouraging enough to cause Pennsalt to abandon interest in an independent sodium chlorate venture. Is that correct?

A. I don't believe that is correct. If the consideration [fol. 626] were the figures alone the project would have been dropped at this stage. The only reason for continuing was the nagging question raised by Mr. Drake earlier, "Why aren't we able to do this project if others can?"

It was in an interest of pursuing this further that we completed the market development work. If these were all the figures we were going to get from a sodium chlorate project I as a division manager could not recommend doing it because we have many projects to consider, we have a limited number of dollars that we can work with, and we have 110 years of history to pull along with the new project that we put into the market place, so that it takes a very careful selection of the project we do.

If these figures had been the only consideration the project would have been dropped right here.

Q. Why did Pennsalt proceed then?

A. If you will remember earlier Mr. Drake and Mr. Shanaman and myself had said, "Let's determine why we are not able to develop this project further," and a task force was set up. This was part one of the task force, and part one was developed solely to give us another look at the economics because it was felt perhaps these economics in themselves would discourage us, and it was at Mr. Shanaman's suggestion, if you will recall there is a letter from Mr. Shan- [fol. 627] aman that followed this report, where he took exception to the way the report was developed, where he said, "You haven't entered any new information. We would like to see the market aspect developed."

It was a result of that consideration rather than the fact that the figures look attractive, for indeed these figures did not look attractive to me.

Q. Mr. Land, at the time you proceeded with the study for report part 2, that was the first part of which is indicated in Plaintiff's Exhibit 82, did you proceed on the assumption that it might be possible for Pennsalt to proceed alone?

A. Certainly.

Q. Did you also proceed on the assumption that Pennsalt might proceed on a joint venture basis?

A. Let me state again if as Division Manager it is possible to put a project together on purely a Pennsalt basis we

would much have preferred to do it in this fashion. However, if we cannot or we find we cannot proceed in this way we would like to look for other ways to do the job.

Q. At this particular point was Pennsalt considering the alternatives of a lone venture or joint venture as possibilities?

Mr. De Lone: I object to the form of that question. Let us understand at what point you are referring to. Will [fol. 628] you fix it in some point of time?

Mr. Freed: Yes. The point of Plaintiff's Exhibit 82, March 12, 1957.

The Witness: I cannot speak for the company in all aspects, Mr. Freed. I can say from my part as manager of the Industrial Division in the East I was thinking of it in terms of a Pennsalt project. I cannot say there was no consideration within the company of a joint venture, but the main emphasis at this time was still as a Pennsalt project.

I would have had the opportunity to present it as a Pennsalt project had the figures come out where they should have.

By Mr. Freed:

Q. As you undertook the Arthur D. Little study which immediately followed Plaintiff's Exhibit 82, was that study undertaken solely for the purpose of determining whether Pennsalt could go ahead with a sodium chlorate plant in the East alone?

A. Solely for that purpose? I do not believe I can say that I know it was taken solely for that purpose, Mr. Freed; it was taken to follow up the charge given to the task force to determine why we are not able to justify a plant in the East.

Q. Mr. Land, did you have anything to do with negoti- [fol. 629] ating the contract with Arthur D. Little that was the prelude to the market survey that that organization performed for Pennsalt?

A. I did not.

Q. Are you aware of the fact that Pennsalt requested Arthur D. Little to report back to it on joint venture opportunities in sodium chlorate at the time the contract with Arthur D. Little was entered into?

A. I do not recall that I remember that precisely. I am not surprised.

The Court: Mr. Freed, we will take a ten-minute recess.

(At this point a short recess was taken.)

By Mr. Freed:

Q. Mr. Land, I would like to read to you from Plaintiff's Exhibit 90 which is a letter from Arthur D. Little Company to Mr. Russell W. Sloan of Pennsalt, dated May 8, 1957, at page 3. The letter states:

> "Following collection of data from these sources we will correlate and interpret the findings to provide recommendations on the most appropriate course of action for Pennsalt. We will not reveal your identity during the course of this work but will bear in mind [fol. 630] your interest in joint venture opportunities. If any such opportunities arise they will be brought to your attention promptly."

Addressing yourself to the letter as a whole I wonder whether you can recall for us anything concerning the instructions which your division gave to Arthur D. Little with regard to exploring joint venture opportunities?

Mr. De Lone: I object to that in light of the witness' previous answers that he had nothing to do with setting up the relationship with Arthur D. Little.

The Court: I will overrule the objection.

The Witness: The responsibility for arranging for the work with Arthur D. Little was done through the Technical Division, and their Market Research Department. This is a staff division reporting to the President and separated from the Industrial Division, which is an operating division. Consequently, I, as Division Manager, did not participate in the instructions that were given to Arthur D. Little who prepared the report.

By Mr. Freed:

Q. Then the instructions with respect to exploring joint venture opportunities came from someone other than you.

A. Yes.

Q. Mr. Land, I would like next to direct your attention

[fol. 631] to Plaintiff's Exhibit 99 shown to you this morning. This is the memorandum from Mr. Eastman to Mr. Sloan, dated November 18, 1957, covering a meeting which had been held by Pennsalt personnel on November 6, 1957.

I believe you testified this morning with reference to page 3, item 9(b)?

A. (b)?

Q. 9(b) on that page.

—that although L-14 is the designation in the company for Hugh C. Land, that you in fact did not explore the partnership idea with Olin.

A. That is correct.

Q. Is it correct that at no time prior to the end of 1950 or the beginning of 1960 when Penn-Olin negotiations commenced, that at no time subsequent to the time of Plaintiff's Exhibit 99 did you personally conduct any negotiations with Olin with respect to a joint venture?

A. That is correct.

Mr. De Lone: Might I have that question read?

The Court: Read the question and answer.

(The last question and answer were read by the reporter.)

[fol. 632] By Mr. Freed:

Q. I believe in this morning's testimony, Mr. Land, you gave your reasons for not following up Plaintiff's Exhibit 99 prior to the meeting which was held on December 5, 1957, and which is covered by Plaintiff's Exhibit 102, why you did not have any discussions with Olin. Do you recall your testimony in that respect?

A. I do. Would you like to have me repeat it?

Q. No, it is not necesary. Do you know whether anyone else from the Pennsalt organization between the dates of these two meetings approached or discussed with Olin the prospect of a joint venture?

A. I know that Mr. F. C. Shanaman had discussions with Olin Mathieson concerning the possibility of supplying 2,000 tons of material for an introductory market program. I do not know whether these conversations encompassed a joint venture idea.

Q. But in fact, the reasons which prompted you not to approach Olin between these two meetings were reasons personal to yourself, and the purport of your testimony was

not that these reasons governed Pennsalt personnel in their follow-up to the meeting reported in Plaintiff's Exhibit 99, is that correct?

[fol. 633] A. I don't understand your question.

Q. Perhaps it would be well for you to restate the reasons which prompted you not to carry out the recommendation on page 3 of Plaintiff's Exhibit 99 respecting exploration of the partnership idea with Olin.

A. As a division manager, I wished to determine if this project could be made a satisfactory project for the Industrial Division. Consequently, I had preliminary discussions with our sales people who by this time had had a chance to take a look at the Arthur D. Little report and our marketing division comment. I also wanted to talk with the engineering people who had prepared the estimates and who were under sub-item C going to revise their capital cost estimate, and I frankly had taken the time to do these two items to determine whether or not it would be a good project for the Division before getting around to talk with Olin Mathieson.

Now, as it happened, the December 5th meeting came so soon after this meeting was concluded that I did not have an opportunity to follow up on Item B. It was a secondary item in my mind.

Q. And in fact, between those two meetings Mr. Shanaman did discuss with Mr. Logan, of Olin Mathieson, the possible sale by Olin in the east of sodium chlorate from Pennsalt's western plant?

[fol. 634] A. That is my recollection.

Q. And those discussions were a prelude to the joint venture which finally came into being in 1960?

A. Yes, sir.

Q. I would like next, Mr. Land, to direct your attention to Plaintiff's Exhibit 100, a memorandum from Dr. LaLande to Mr. Drake, dated November 19, 1957, attached to which are some cost estimates for a sodium chlorate plant. Mr. Land, does this document represent the last set of cost estimates on a sodium chlorate plant prior to the December 5, 1957 meeting?

A. Well, it is certainly the last set that I had seen.

Q. Are the figures which are set forth in this document

those on which Pennsalt determined that it was unlikely that it would proceed itself?

A. Certainly they are the figures upon which I based my own judgment.

Q. To your knowledge, were there any other studies which dealt with capital requirements or return on investment, the two elements which are mentioned in Plaintiff's Exhibit 102, under Mr. Drake's first question. Are there any other studies which to your knowledge were available to the participants in the December 5, 1957 meeting recorded in Plaintiff's Exhibit 102?

[fol. 635] Mr. De Lone: I object to the form of that question unles by "other" you mean other than the specific ones states on PX 100. Have there ever been any other studies?

Mr. Freed: I am referring to any studies other than Plaintiff's Exhibit 100.

A. To my knowledge, there were no other studies.

Q. Directing your attention to Plaintiff's Exhibit 100, on the attached page which contains estimates is it a fact that the fixed investment required for the sodium chlorate plant there being considered was $6,320,000?

A. That is as reported.

Q. And the return on investment calculated in this study was 18.3 per cent, is that correct?

A. That is correct, on fixed investment.

Q. Right. And the return on fixed investment then would be 18.3 per cent times that $6 million figure, or $1,156,560?

A. On fixed investment, yes.

Q. That's correct?

A. That is correct, assuming your arithmetic is correct.

Q. Yes. With respect to total investment, the total investment indicated on the studies is $7,255,000, is that right?

A. That is correct.

[fol. 636] Q. And multiplying that by the 15.9 per cent return, the return to Pennsalt on this project would have been $1,153,545; would that be correct?

A. Assuming the arithmetic is correct.

Q. And it was on the basis of this computation of return on investment and dollars which would come back to Pennsalt that Pennsalt decided that the economics were not sufficiently satisfactory for it to proceed alone, is that correct?

A. That is correct.

Q. Then it was not a question of Pennsalt being unable to make a profit on the sodium chlorate plant, was it?

A. Make any profit at all?

Q. Right.

A. These figures show there is a nominal profit.

Q. The figures which we have given are considered by you to be nominal profit, is that correct?

A. Well, they are certainly considered not to be suitable ones for projects in Pennsalt's program for growth in 1957.

Q. Then it is a fact that the figures available to Pennsalt show that a return on investment in the range of $1,100,000 was available but that was not a sufficient amount for Pennsalt to proceed within the framework of its own return on [fol. 637] investment policy, is that correct?

A. A return on investment of 15.9 per cent on total investment would not be sufficient to let us take the gambles of the market to return the type of profit that we need for our shareholders.

Q. Mr. Land, I would next like to turn your attention to Plaintiff's Exhibit 111, shown to you this morning by Mr. De Lone. It is the memorandum to the file by Mr. Logan and dated February 4, 1958. I believe you testified that the account given here by Mr. Logan at the meeting in Philadelphia was correct but that as you interpreted it, it did not preclude Pennsalt from giving further consideration to a lone venture, is that correct?

A. I am sure Pennsalt would have considered a lone venture after this time, yes sir.

Q. And did Pennsalt in fact consider a lone venture after the date of Plaintiff's Exhibit 111?

A. I don't believe we did on sodium chlorate alone, if that is your question.

Q. Did Pennsalt consider a lone venture which would include the product, sodium chlorate, for production and sale in the east, following the date of Plaintiff's Exhibit 111?

A. Yes. We did consider a joint ammonium chlorate-sodium perchlorate venture for Pennsalt alone after this date.

Excuse me; you are correct. You make sodium chlorate [fol. 638] and you convert it to ammonium perchlorate. The answer should be sodium chlorate and ammonium perchlorate. That is the final product.

Q. Then it is correct that following Plaintiff's Exhibit 111, Pennsalt did not abandon the idea that it might be a producer and seller of sodium chlorate in the east alone?

A. I am sure we in the Industrial Division didn't abandon it.

Q. If you didn't abandon it, sir, can you tell us why you testified this morning that Pennsalt had no incentive to sell sodium chlorate in the east in the years 1958 and 1959?

A. Actually, as a result of our December 5th meeting we had made the decision that it was unlikely that Pennsalt would continue with a sodium chlorate project in the east on its own. At that same time the surplus material available from Portland, Oregon, was offered to Olin Mathieson for test sales work. Consequently, the direction was taken. So that at that point there was little reason for us to continue to push the sale of sodium chlorate because the supply had been committed for.

Q. Do I correctly understand you as testifying that Pennsalt had precluded itself from testing the market for sodium chlorate in the east by its arrangement with Olin?

A. Precluded? There was no reason for Pennsalt to test [fol. 639] the same market that Olin Mathieson was going to test with its 2,000 tons of sodium chlorate. We had reviewed the opportunities through our own sales people and we had the benefit of an Arthur D. Little report. There was no reason for us to be continuing to sample that market during the years 1958 and 1959.

Q. In other words, there was nothing additional that Pennsalt had to do in order to equip itself to carry out a lone venture if in fact in the studies which you testified it conducted after February 4, 1958 it was to decide to embark on a lone venture in the east, is that correct?

A. There were in fact many things we had to do if we were indeed to go ahead with a lone venture in sodium chlorate. We had enough knowledge about the market to make that decision. However, if the decision had been made there would have been a lot of work that we in the Division had to do to set up the type of selling organization necessary to handle the sale to this market.

Q. But at least to the extent that setting up a selling organization to sell sodium chlorate in the east was concerned,

you had effectively precluded yourself from doing that by committing the tonnage to Olin, is that right?

A. Well, let me state it this way. Until we are sure that the Industrial Division is going to have a source of supply [fol. 640] in the east we had no reason, nor in fact was it desirable for our people to be out soliciting sodium chlorate sales. The fact is it would be at a disadvantage to us. So until we could get in our planing to the stage where we knew we were going ahead alone, we would certainly not take that step in the marketplace.

Q. Is it correct to conclude from what you have said that Pennsalt did not consider itself prejudiced in its ability to carry out a lone venture by the fact that it had committed tonnage from Portland to Olin?

A. I certainly felt we still had the ability to carry out a lone venture after the arrangement with Olin Mathieson had been made.

The Court: If the circumstances justified it?

The Witness: Yes, if the circumstances would justify it.

Mr. Freed: I wonder if I may have a five-minute recess at this point, your Honor?

The Court: All right.

(At this point a brief recess was taken.)

[fol. 641] By Mr. Freed:

Q. Mr. Land, do you recall testifying this morning with respect to the meeting of November 3, 1958, in which members of Pennsalt's management decided to take further steps in the direction of a lone venture by Pennsalt independently in the direction of a combined chlorate-perchlorate facility at Calvert City?

A. Yes.

Q. The results of that meeting were correctly summarized in Plaintiff's Exhibit 146. Is that right?

A. I don't believe the results are absolutely correctly recorded here. There is some dispute as to timing; there is some effort to correct this record.

So I do not want to testify that these are absolutely the correct minutes of the meeting.

Q. On page 4 of Plaintiff's Exhibit 146 there is a nota-

tion of a serious inconsistency in timing. Is that what you refer to?

A. This is a part of what I mean.

Q. What was the only other thing you said was wrong with these minutes?

A. Basically what I am referring to is this inconsistency in timing that is recorded here and also noted here.

[fol. 642] Q. When was it that the efforts which you and your colleagues undertook on November 3, 1958, again to explore an independent venture by Pennsalt in the east on sodium chlorate and its related product ammonium perchlorate? When was it that Pennsalt reversed this decision or the direction indicated in Plaintiff's Exhibit 146?

A. When was it in time?

Q. Yes.

A. It was sometime after the first of the year of 1959.

Q. Can you fix precisely the date on which that change in direction took place?

A. Mr. Freed, I spent about an hour and a half with you in Tacoma under deposition attempting to fix this date precisely. I couldn't then. I have had occasion to review the record since then and I can say to you now I still cannot pinpoint precisely the date at which this approach was dropped.

Q. Were the efforts which you made at the time of your deposition, sir, the best efforts which you believe yourself capable of making on the project of finding the date or the time period within which Pennsalt decided to drop an independent chlorate-perchlorate venture?

A. I have reviewed the file since our meeting in Tacoma for deposition, and I can find nothing that let's me pin-[fol. 643] point it any better than I was able to in deposition, Mr. Freed.

Q. Do you recall, Mr. Land, at the time of your deposition being shown the press release of February 10, 1959, which at that time was marked as Plaintiff's Land Exhibit 10?

A. Yes, I remember this exhibit.

Q. Do you remember testifying with respect to that document?

A. I remember saying that this date——

The Court: You need not review your testimony, but you remember testifying about it?

The Witness: Yes.

By Mr. Freed:

Q. I believe I misstated that. That is Plaintiff's Land Exhibit 8.

A. Correct.

Q. I would like to read to you from the transcript of your deposition, and it has been marked in evidence as Plaintiff's Exhibit 400. I read to you from page 153.

"Question: I ask you, sir, whether you can recall whether you had any participation in the preparation of this release or in the internal management discussions respecting the subject matter of the release? [fol. 644] "Answer: I don't recall having participated in the preparation of this release.

"Question: Do you recall, sir, having seen the release at the time it was issued?

"Answer: I am sure I would see each release when they are issued.

"Question: And can you recall if your recollection is refreshed by this release what the view of Pennsalt's management was at this time respecting ammonium perchlorate prospects?

"Answer: This would seem to indicate that the fading off that I am speaking about perhaps occurred later than the earlier January 10, and perhaps we would have to affix it now sometime between February 10 and June as a result of this document."

Do you recall that testimony?

A. I recall that testimony.

Q. Was the testimony which you gave this morning intended to retract any of the testimony from your deposition?

The Court: You mean this testimony you just called his attention to?

Mr. Freed: That is correct.

[fol. 645] By Mr. Freed:

Q. Was any testimony which you have given in court today designed to——

The Court: I think that question is a little too broad. I think you ought to direct the witness' attention to the testimony he gave this morning and ask him specifically with reference to it and with reference to deposition testimony.

By Mr. Freed:

Q. With respect to the testimony which you have given about the date on which Pennsalt's evaluation of ammonium perchlorate prospects began to dim?

Can you tell us whether there is any date earlier than the date of the press release you now hold in your hand which could be fixed as the time when Pennsalt changed its mind about ammonium perchlorate?

A. I believe this morning I mentioned a letter that was received in November, at which time there was some question as to whether or not there were double figures used in preparing our estimates.

If you infer that to mean a damping off of Pennsalt's enthusiasm I am sure we recognized that there isn't any precise way that you can pinpoint as an ethereal thing as this. That certainly contributed to our evaluation [fol. 646] but the very fact that on February 10, 1959, we were willing to invest approximately $2 million in ammonium perchlorate facilities would seem to indicate that at this time Pennsalt had confidence in this venture.

Q. Then at least as of the date of this press release is it correct that Pennsalt still considered the ammonium perchlorate-sodium chlorate project in the east as a good possibility by itself?

A. No. I think that is perhaps an incorrect inference because, as I have testified, the report from Central Engineering, which I believe was in January, in fact it is January 20 in Plaintiff's Exhibit 153, was not sufficiently attractive to let me as a division manager define the scope so that our Central Engineering Department could proceed with the preparation of an appropriation request.

While it was still being considered I do not believe you could say that as of the date of February 10 it was still attractive in the east.

Q. Was it abandoned as of that date?

A. No. I believe I testified, and I attempted to find what in my recollection was a second look at the engineering figures. I can't find any record of it in our files, nor any other way to recall it specifically; so that I can only again say that somewhere between the time of first [fol. 647] reviewing these figures in January and the June period when the project was to go to the board of directors, which it did not do, we abandoned this approach for Pennsalt alone.

Q. In trying to fix the time more specifically than simply between January 20 and sometime in June can you recall any event within that period which sealed the doom of this independent venture, so to speak?

A. Mr. Freed, I cannot.

Q. From your examination of the February 10, 1959, press release would it be fair to conclude that at least as of that date the prospect had not so dimmed that the project had been abandoned?

Mr. De Lone: I object to the form of "the prospect." I think the question should define prospects for what.

The Court: Will you restate the question, Mr. Freed.

By Mr. Freed:

Q. At least as of February 10, 1959, Mr. Land, is it fair to conclude that the prospects of Pennsalt proceeding with a combined chlorate-perchlorate plant in the east had not vanished?

A. Yes, I think it is fair to say we could still be considering the prospects in the east at this time.

[fol. 648] The Court: Mr. Freed, we will take a recess and that will give you an opportunity to check your notes overnight, unless you are about to conclude?

Mr. Freed: I think we will accept your offer. Thank you.

(At this point the trial was adjourned, to reconvene at 10:00 a.m., Tuesday, November 21, 1961.)

[fol. 649] Tuesday, November 21, 1961, 10:00 o'clock a.m.

PRESENT:

As before noted.

Mr. Freed: Your Honor, overnight the Government has reviewed Mr. Land's testimony given yesterday in court on behalf of the defendants. We have also reviewed Mr. Land's earlier testimony on deposition introduced on behalf of the Government as Plaintiff's Exhibit 400.

On the basis of the testimony already in evidence we have no further questions.

Mr. De Lone: Would your Honor indulge us for just a moment. There are a few exhibits about which I want to ask Mr. Land. We have not had them ready, not anticipating this.

The Court: Do you want a five-minute recess?

Mr. De Lone: It would take about a minute for my associate to get the papers.

HUGH C. LAND, Resumed.

Redirect examination.

By Mr. De Lone:

Q. Mr. Land, in the course of your cross-examination [fol. 650] yesterday Mr. Freed called your attention to various estimates of cost and return which appear in Plaintiff's Exhibit 66, an unconformed copy of which you have before you.

You will note, for instance, in there a reference to a capital cost for a 12,000-ton per year plant ranging between $3,560—I am sorry. $3,560,000 and $4,773,000.

If the capital cost were the higher of those two figures would that have the effect of increasing or reducing the return on investment for the stated production of 12,000 tons?

A. It would reduce the return on investment.

Q. Will you turn to Plaintiff's Exhibit 82, about which

you were also asked yesteday, and directing your attention to page 4 you will see in the middle of the page reference to these estimates.

"We have used nine cents per pound in drums as the selling price. This is based on eight cents per pound bulk C.L. plus one cent per pound in drums."

I don't know what the "C.L." means.

A. Carload.

Q. Carload.

"—plus one cent per pound in drums."

If the product of the plant under consideration in this [fol. 651] study were to sell all of its product in bulk would it be sound then to predicate your figures on the drum price of nine cents per pound or on the bulk price of eight cents per pound?

A. You would have to use eight cents per pound for bulk shipment.

Q. In your considerations of a sodium chlorate plant at Calvert City or at some location east of the Rockies were your considerations with reference to a plant where the produce would be drummed, or what was the target you were interested in? What was the market you were thinking of?

A. We considered both drums and bulk; however, the essence of the market was for bulk shipments.

Q. Bulk shipments are the way the pulp industry takes the product, in bulk rather than in drums?

A. That is correct.

Q. Then all of the calculations on this exhibit, PX-82, and if I am wrong please correct me, all of the calculations are predicated on a figure one cent a pound above the market for what was the then going market price for sales in bulk to pulp mills?

A. That's right.

Q. Mr. Freed did some mathematics with you yesterday with reference to the profit that Pennsalt might have made [fol. 652] on the basis of the projections in PX-82. Would that profit be contingent on the price that was the basis of the projections, and also contingent on selling the full production—in the one case, 15,000 tons per year; in the other case, 20,000 tons per year?

A. These figures are prepared on the basis of capacity, which is the figure that you mentioned.

Q. So that the matters of price and how much you will in fact sell are assumed, and would it be fair to say, beyond the competence of the persons preparing this report to give you any guarantee for the future?

A. This is a regular way of preparing a report. It says to a division manager, "This is the optimum return you can expect." From here we have to prepare a detailed sales estimate and an estimate of what market price will be realized in the field.

Q. Is the return also dependent on what the construction actually costs, the construction of the plant itself, as distinguished from what is projected in the estimates?

A. Yes, sir.

Q. Would you turn to PX-100, which I believe you have before you, Mr. Land. Did I understand you to testify on cross-examination yesterday that these were the only figures [fol. 653] available to you on December 5, 1957, when Pennsalt made its decision not to go forward with the sodium chlorate plant in the East on its own?

A. I don't remember whether I said they were the only figures. I should have said they were the latest figures.

Q. The figures in PX-82, which you have seen just before this, were also available to you, were they not?

A. Yes, sir.

Q. And I assume more detailed studies to back these up?

A. Yes, sir.

Q. Now I show you PX-155, a press release of February 10, 1959. You were asked some questions yesterday about that in connection with Pennsalt's thinking about a combined sodium chlorate-ammonium perchlorate plant for Pennsalt alone East of the Rockies. Does that press release, PX-155, deal with a plant for Pennsalt East of the Rockies, a combined ammonium perchlorate-sodium chlorate plant?

A. No, sir. This press release has to do with the plant at Portland, Oregon and is concerned only with the western market.

Q. What then, if any, is the relationship between this press release and Pennsalt's thinking with reference to the

possibility of a combined sodium chlorate-ammonium perchlorate plant East of the Rockies for Pennsalt alone?

[fol. 654] A. It is very difficult to be precise as to the relationship of these two subjects. It is obvious this deals with the West. The fact that Pennsalt is making a substantial investment for ammonium perchlorate in the West would have a retarding effect upon our considerations in the East, in that here is a capital investment which is already committed in this field.

Q. Are you able from looking at this document to fix in point of time when it was that your interest began to wane in a sodium chlorate-ammonium perchlorate combined plant for Pennsalt on its own East of the Rockies?

A. Mr. De Lone, I am not able to fix a precise period in time. I have testified that I am sure that the matter was seriously considered in January. I can't find anything to substantiate figures that it was considered after that time. But I cannot fix it any closer than that.

Q. You were shown yesterday PX-153, some estimates from a Mr. Tryson dated January 20, 1959. Is that the consideration to which you make reference?

A. I am sure they were considered as of that time.

Q. You were asked by Mr. Freed about your knowledge with reference to Pennsalt's salesmen in the southeastern part of the United States as of the date of an answer to interrogatories which was shown to you. You made refer-[fol. 655]. ence on several occasions to what the situation was in 1955. How long were you personally concerned with and interested in and familiar with the number of salesmen available to Pennsalt in the southeastern states, accepting Mr. Freed's description of them to you yesterday, those that were concerned with sales of industrial chemicals to the pulp mills?

A. My knowledge is really limited to the area that I was Division Manager of the Eastern Division, which would be 1955 to the early part of 1960.

Q. During that period from 1955 through 1960 did you have any salesmen actively engaged in solicitation of sales of industrial chemicals to the pulp and paper industry

in the southeast, as Mr. Freed has described it, other than Mr. Wurst, that you mentioned, or his successor after his death?

A. I do not believe so.

Mr. De Lone: I have no further questions.

Recross-examination.

By Mr. Freed:

Q. Mr. Land, is it not a fact that the higher selling price of drummed sodium chlorate reflects the higher cost of drumming and the higher cost of selling sodium chlorate in smaller quantities?

A. Well, it certainly reflects the higher cost of drumming [fol. 656] material. I do not believe there would be a higher cost of selling because the technical service effort is inherent in the bulk sales, which is not necessarily in the drum sales. I would think the selling effort would be higher in the bulk.

Q. Once your establishment is set up it is a fact, is it not, there is a lower cost of production and selling sodium chlorate in bulk than in selling sodium chlorate in drums?

A. I am sure there is a lower cost of producing bulk. The combined cost because of the extra technical service work on the selling of bulk to the pulp and paper industry might make that the higher total cost, Mr. Freed. I cannot be sure of that answer.

Q. To put it another way: Does the price differential between sodium chlorate in drums and sodium chlorate in bulk reflect sheer profit to the producer, or does the additional price of sodium chlorate in drums reflect that there are additional costs which a producer must take into account in selling in drums?

A. Normally it is for that reason the differential is set up.

Mr. Freed: I have no further questions, your Honor.

Mr. De Lone: Thank you, Mr. Land. Mr. Drake.

[fol. 657] WILLIAM P. DRAKE, called as a witness on behalf of the defendants, being first duly sworn, testified as follows:

Direct examination.

By Mr. De Lone:

Q. Mr. Drake, where do you live?

A. In Berwyn, Pennsylvania.

Q. You are presently employed, are you not, as the president of the defendant in this case Pennsalt Chemicals Corporation?

A. Correct.

Q. Would you tell us in brief the course of your career in Pennsalt?

A. I started with Pennsalt in 1934 while still a student at Bowdoin, working summers. I worked for about three years in the plants as a student-trainee. I was then transferred to sales. I worked in sales ultimately as sales manager of the Chemical Specialties Division. I later became the general manager of the Chemical Specialties Division for a short time. I became a vice president of the company in 1949, I think it was. I was then later made the general manager of the Industrial Chemicals Division until February of 1955 when I became executive vice president, [fol. 658] and in July of 1955 president.

Q. You said or you testified you are president. Is there a chairman of the board of Pennsalt?

A. No.

Q. Is any of the members of Pennsalt other than its president a member of the board?

A. No.

Mr. De Lone: I will ask the Clerk to mark for identification as Defendants' Exhibit 3, a letter from Mr. Drake to Mr. Logan of June 18, 1953.

The Clerk: Defendants' Exhibit 3 For Identification.

(A letter from Mr. Drake to Mr. Logan dated June 18, 1953, was marked "Defendants' Exhibit No. 3 For Identification.")

Mr. De Lone: And to mark as Defendants' Exhibit 4 a letter from Mr. Shanaman to Mr. Drake dated July 9, 1953.

(A letter from Mr. Shanaman to Mr. Drake dated July 9, 1953, was marked "Defendants' Exhibit No. 4 For Identification.")

Mr. De Lone: As Defendants' Exhibit 5 a letter from Mr. Drummond to Mr. Drake of December 1, 1954.

(A letter from Mr. Drummond to Mr. Drake dated December 1, 1954, was marked "Defendants' Exhibit No. 5 For Identification.")

[fol. 659] By Mr. De Lone:

Q. Mr. Drake, were you involved in the negotiation of an agreement with reference to a right to use Olin Mathieson's chlorine dioxide generating system?

A. Yes.

Q. How did this come about, your negotiating for a chlorine dioxide right from Olin Mathieson?

A. Mr. F. C. Shanaman, who was at that time the head of our western operation in the northwest, expressed a desire if possible to get a license under the chlorine dioxide process, recognizing that the Solvay organization had a similar process and were beginning to solicit accounts in the northwest primarily, and were using this as a sales tool to get business.

Mr. Shanaman felt that were we able to negotiate an agreement with Mathieson by which we could offer their process it would serve to counteract the added competition from Solvay, and, therefore, since I was in the East he asked me if I would negotiate this with John Logan of Mathieson.

Q. These papers which you have before you, sir, which are PX-58, letter of May 22, 1953, PX-59, a letter of May 25, 1953, DX-3, a letter of June 18, 1953—do you have that?

A. Correct.

Q. And a memorandum from you to Mr. Shanaman of June 26, 1953—I should say from Shanaman to you.

[fol. 660] A. DX-4.

Q. Yes. Another from Shanaman to you dated July 9, 1953.

A. July 9 is the DX-4.

Mr. De Lone: There seems to be some confusion. I am very sorry, sir.

I will ask the Clerk to mark as Defendants' Exhibit 6 a memorandum from Mr. Shanaman to Mr. Drake dated June 26, 1953.

(Memorandum dated June 26, 1953, from Shanaman to Drake, was marked "Defendants' Exhibit No. 6 For Identification.")

By Mr. De Lone:

Q. Now Mr. Drake, I think the set is complete. Plaintiff's Exhibit 58, Plaintiff's Exhibit 59, Defendants' Exhibit 3, Defendants' Exhibit 6, Defendants' Exhibit 4, Plaintiff's Exhibit 60, and Defendants' Exhibit 5, do they all concern the negotiations between you and Mr. Logan with reference to this chlorine dioxide licensing arrangement?

A. Did you make a statement or did you ask a question?

Q. I asked you if they all concerned the negotiations about this chlorine dioxide arrangement with Olin Mathieson?

A. I would say all except DX-5, which in effect does not concern my negotiations. It is merely a letter advising me of a change. This is a later document after the negotiations [fol. 661] had been completed, I believe. But for all intents and purposes, yes.

Q. Calling your attention specifically to PX-60, the letter from you to Mr. Logan of July 31, 1953, that has attached the two-page agreement between Olin Mathieson and Pennsalt on this subject. Now will you look at that agreement and tell me whether that sets forth the entire understanding of the parties with reference to chlorine dioxide licensing as you had negotiated it in July of 1953?

A. This, including the attachment referring to the licensing of the mills themselves, yes, it does include the complete agreement.

Q. Mr. Drake, when did you first become aware of any

interest or concern in Pennsalt over the possibility of constructing a sodium chlorate plant East of the Rocky Mountains? I show you in that connection, if it is of any help to you, Plaintiff's Exhibits 64 and 65.

A. The first recollection that I have of our interest in a plant for sodium chlorate in the East—when I say East, East of the Rocky Mountains—was shortly after we had increased the capacity of our Portland plant. George Grogan, who was then sales manager——

Q. Could you fix which increase you are talking about?

A. The 1952-3 increase. It was in that period. I beg [fol. 662] your pardon; it was in 1954, late 1954, that we had the increase, this particular increase.

George Grogan came to me one day and indicated that he had noticed that the western plant had excess chlorate and would it be possible for him to handle some of it. This was a perfectly natural request on the part of any sales manager whose desire obviously is to sell chemicals.

I then asked him how much he thought he might be able to sell in the East. Subsequently, as the document PX-64 indicates, I passed this on to the Central Engineering Group, who about the same time were roughing up some figures on what we might do for a chlorate plant in the East. I am sure that this probably had been stimulated by the expansion that we had put in at Calvert City, that being a logical spot for a chlorate plant due to its low cost power primarily, and the fact that we had an operation there.

Q. You have indicated that you inquired of Grogan how much Pennsalt might sell in the East. Was your inquiry with reference to what it might sell if it had a plant in the East, or did you mean making it on the West Coast and shipping it East?

A. I am sure that it was a combination, actually. I wanted to be able to have some definite figure to talk to Mr. Fred Shanaman about in the event we shipped it East, [fol. 663] and also inasmuch as we had been producing chlorates in the West since, I believe, 1941, it was a logical thing for us to periodically think of the possibility of producing chlorate in the East.

Q. PX-64, which you have before you, is your memorandum to Mr. Woodard that you made reference to, which

says, "We should be able to sell about 5,000 to 8,000 tons out of Calvert at a price of 8.25."

A. Yes.

Q. Did Mr. Grogan indicate to you that you would be able to sell that tonnage also out of your Portland plant, sell it in the East out of your Portland plant?

A. No.

Q. I call your attention to PX-65. I see your initials—I'm sorry, your designation, D-11—at the bottom of that document, the letter from Mr. Grogan to the Champion Paper Company. Do you recall the circumstances under which that letter was written to Champion Paper?

A. I certainly do because as I recall it the wording of the last paragraph of that letter is, I believe, my own.

Q. And the last paragraph makes reference to a contemplated plant at Calvert City which is still in the figuring stage?

A. Yes, sir.

[fol. 664] Q. Did that figuring stage eventuate in a document of March 8, 1955, Mr. Woodard to you, which has been marked Plaintiff's Exhibit 66, and which I show you?

A. I believe so.

Q. In PX-66 it says or makes reference to the basic return for sodium chlorate manufacture is not attractive.

What was Pennsalt's policy at this time with reference to the return on investment which it sought for a project such as this, a new plant to make a product not theretofore made in that marketing area?

A. At that time it was 30% return before taxes on the total investment.

By the Court:

Q. Physical properties, fixed assets and working capital?

A. Yes.

By Mr. De Lone:

Q. Did you have anything to do with formulating that policy, Mr. Drake?

A. Yes.

Q. Why is it that you were seeking a 30% return? What is the reason for that?

A. If anyone were to look at our record of the preceding years and the return on investment of the company they would readily note that Pennsalt's return on investment [fol. 665] by comparison with other chemical companies was very poor. Part of the reason, I believe, that it was poor is that we did not have guide posts of the nature we now have and instituted in 1955 which would help us to direct the future of our company.

We set up those guide posts as a part of an over-all program for growth for the company. The objective of the principal objective was then, and still is, and will continue to be, to increase on a sound and consistent basis our earnings per share of stock outstanding.

One of the ways you do that is to only invest your shareholders funds in projects which will show a sufficient return to increase that over-all return and thereby yield the increase in earnings per share which we were trying to obtain.

I am happy to say, incidentally, that we have been somewhat successful in it, although we are far from where we should be.

Q. Mr. Drake, I show you Plaintiff's Exhibit 340. Would you tell us what that is?

A. Pardon?

Q. Tell us what this Plaintiff's Exhibit 340 is.

A. I mentioned a moment ago that we did not compare favorably with our competitors. These represent or this document represents a list of competitors. We have broken [fol. 666] down into various segments those whose sales are under a hundred million, those of sales of a hundred million to under four hundred million, and those with sales over four hundred million.

This shows what the net return—this is after taxes—is for each of these companies, including Pennsalt, for the years 1950 through 1960.

Pennsalt is at the bottom of the page. You will note by comparisons that with very few exceptions Pennsalt should be at the bottom of the page in terms of return on shareholders' equity.

Q. You became the executive vice president in February of 1955, and the president in the summer of 1955?

A. Right.

Q. Was it on your becoming president or executive vice president that you began to stress the point about improving the return on shareholders' equity which you mentioned?

A. Actually when I became the executive vice president.

Q. In this Exhibit PX-340 the return on shareholders' equity computed there, was that computation based on what is distributed to the shareholders, in other words, after corporate taxes?

A. Correct. This is not necessarily distributed to shareholders.

[fol. 667] Q. I beg your pardon.

A. It is what is earned after taxes on the shareholders' investment.

By the Court:

Q. The difference between assets and liabilities, I suppose?

A. It is capital and surplus, which is really the total of capital and surplus as against the whole gross investment.

We have another term which we used internally to determine the effectiveness of management's handling of all the funds made available to them; that is return on gross investment.

This is the return on what the shareholder is interested in; how much has he put into this venture, either put in or left in.

By Mr. De Lone:

Q. This shows what he has earned on what he put in, per share?

A. What he has earned percentagewise of that amount which he has either put in or left in.

By the Court:

Q. He has put in increments there to?

A. Yes.

Q. This is on the book shareholders' equity, I take it, [fol. 668] your balance sheet shareholders' equity?

A. Yes.

By Mr. De Lone:

Q. With reference to this other figure of 30% we referred to when you were looking at PX-66, that 30% on return of the project, is that on a before tax or after tax——

A. 30% before taxes.

Q. In your program since that time have all your project by project computations been on the basis of a before tax return?

A. Right. I might add here that we estimate that we must invest in our company——

You have to think of this in terms of Pennsalt only, it does not apply to any other company because companies are not that much alike.

But in our company it takes an investment of approximately $30,000,000 at 30% return before taxes to increase our return on shareholders' equity by 1%.

Why is that? Obviously if you had the whole thirty million at a 30% return it should increase it considerably more, but the 30% has to allow also for obsolescence of old products, and it is constantly going on, particularly in the chemical industry, and, furthermore, it has to allow for the no return projects such as the replacement of a roof, and the [fol. 669] upkeep of your plants, which you have to do, so that if you look at it in that light I think you have a clearer picture of just why a 30% return is so very essential.

There is nothing sacred about it. I said before it is a guide post. But you cannot vary from it very much or else your objective becomes almost impossible.

Q. I see, Mr. Drake, that from 1955 to 1960 there has been some improvement in the return on shareholders' equity in Pennsalt.

A. Yes, there has.

Q. During all of that period were you seeking a 30%

return, or something in that order of magnitude for new projects?

A. A project of this nature, yes.

Q. During that period approximately what has been invested by Pennsalt in new projects and other capital investments?

A. Our total capital investment in the last five years has been a little over $60,000,000. Coincidentally, the return on the shareholders' equity has gone up about two per cent.

Q. You do not know what the figure is for 1961 yet?

A. For the first nine months it was a little under 9%.

Q. Is this return on investment of significance to your [fol. 670] company in the market place for money?

A. I cannot overemphasize the importance of it. People are not going to invest money in Pennsalt if we cannot show at least as good a return as they can get in the average chemical companies.

Q. Reverting, then, to the subject of sodium chlorate in the East, and to Plaintiff's Exhibit 66, that bears on the top of it this time just the letter "D" with the word "agree."

Do you see that in your handwriting, I believe? That is not on your copy?

A. That is all right. I can recall it.

Q. I would rather you have a copy that shows it. Here is a conformed copy that has numbers and the letters, and the word "agree" and a question mark.

A. Yes. That is correct.

Q. The "D" underneath means "Drake." You did not write "D-11"?

A. D-11.

Q. Is that D-11?

A. "D" with a "w" inside of it.

Q. At this time so far as you are concerned, March 8, 1955, did your question and the answers you received, and your further consideration of those answers lead to a conclusion as to whether or not you would go forward alone, [fol. 671] March 8 or thereabouts, 1955, in constructing a sodium chlorate plant in the East?

A. The question I asked was the last sentence; it was in relation to the last sentence on the page, where it says:

"We believe the expense of refining these figures further would be unwarranted."

I sent this very document to—I believe it was Hugh Land, who was then production manager; Frank Lucard, who was either the head of market development or technical services in the division; George Grogan, who was sales manager; and I believe I sent it also to George Collins, who at that time was assistant to the president. They agreed.

I said, "Do you agree?" And they all said "Yes."

That buried this momentarily at least.

Q. At this time, on March 8, 1955, when sodium chlorate in the East for Pennsalt alone was buried, had you ever had, or to your knowledge had anyone else in Pennsalt ever had, any discussions with Olin Mathieson about the possibility of a joint venture in sodium chlorate in the East?

A. I am trying to fix the dates in my mind.

Q. Is there any paper I can supply to help you fix the dates?

A. No. No, I had not had any discussion with Olin Mathieson up to this point. If I am correct on my dates, I [fol. 672] think no one had had discussions at this stage.

Q. Who was it that, so far as you know, first may have had any discussions with Olin Mathieson on that subject?

A. That's what made me hesitate on this last answer. As I recall it, there was some mention made in the documents in regard to Roy Shanaman, I think it was.

Q. Mr. Drake, I will show you Plaintiff's Exhibit 73, dated December 27, 1956, over a year after the memorandum we are discussing, and call your attention to the statement in there, "Incidentally, the last time we talked with Olin Mathieson about building a chlorate plant . . ." Do you see that, about the middle of the last page?

A. Yes.

Q. Does that aid you, that memorandum of December 27, 1956, in recalling when you first learned of any discussions with Olin Mathieson about a chlorate plant in the East?

If it doesn't, Mr. Drake, I don't want you to guess. You just tell us whether you had ever been involved.

A. I know I hadn't. I am just trying to make sure that I answer the question as accurately as possible.

Q. If you are not able to answer accurately as to others, I just don't want you to guess.

A. Very good.

Q. So far as you are concerned, on March 8, 1955, you [fol. 673] had never discussed the possibility of a joint venture with Olin Mathieson?

A. No.

Q. After that March 8, 1955 putting to bed the idea, as I think you described it, when did it next come to your attention the possibility of a sodium chlorate plant in the East? In that connection I will show you Plaintiff's Exhibit 71 and Plaintiff's Exhibit 72, as well as 73 which you already have before you.

Do you understand the question, Mr. Drake? Take your time in looking at the documents.

A. As I recall it, as I said before, we put the idea of a chlorate plant in the East to bed after the agreement on the March 8, 1955, document, PX-66. Then along in about December of 1956 came the announcement that Oldbury was then expanding its Mississippi plant. This came to me, I think, out of a newspaper clipping, the information of which I sent to Fred Shanaman with the comment that on the face of this announcement it makes us look kind of silly when we consider the number of times we have evaluated unsuccessfully the installation of chlorate plant in the southeast.

I might add there that "we" meant the company at large, not necessarily Shanaman or myself. I suggested that he look at it again when he came East in January.

[fol. 674] Q. You were in court when Mr. Land was testifying yesterday and he summarized in general the fact that he and Mr. Shanaman had both responded as in Plaintiff's Exhibits 72 and 73, and that the net result was the commission of a task force as shown by Plaintiff's Exhibit 74, which I now show you. Is that in general consistent with your recollection of what transpired?

A. That's correct.

Q. With reference to Plaintiff's Exhibit 74, this is a memorandum from Mr. Willits to Dr. LaLande. It says, "The purpose of the report is to determine for the last time the following," and then lists these items. A copy

went to you. Did you agree that that was the purpose of the task force?

A. Yes, sir. Mr. Willits, incidentally, at this time was secretary of the group, he having served as assistant to the president. In fact, he still was on January 22, 1957, and in that capacity served as secretary of the management committee.

Q. In the memorandum PX-71, which rekindled your interest, the reference is to Oldbury expanding its Mississippi plant. I call your attention to the response, December 27, 1956, from Land to you. At the bottom there, the last paragraph, "It is entirely possible that Hooker is expanding their production in the East with the idea of increasing the selling price after they have become so thoroughly [fol. 675] entrenched in the eastern market."

Is Hooker and Oldbury the same?

A. Hooker had purchased Oldbury for, I think, something like $19,000,000 shortly before this, several years before this, so that they are one and the same. For a time I believe they operated Oldbury as the Oldbury Division, which, incidentally, formed quite a formidable competitor which we were not oblivious of when we were thinking of a plant in the southeast.

Q. Mr. Drake, do you now have before you Plaintiff's Exhibits 76, 82 and 83?

A. Yes, sir.

Q. Have you looked at them?

A. Yes, sir.

Q. Calling your attention to PX-76, you wrote to Dr. LaLande. He was in charge of this task force, wasn't he?

A. He was the chairman of the task force, that's correct.

Q. You wrote to him about the report that AmPot was going to build a new plant at Aberdeen, Mississippi. "I thought this information would be helpful to you in the appraisal you are making of our chlorate position."

What was your thinking about the significance of the intelligence that AmPot was about to build a plant in Mississippi?

A. As I mentioned a moment ago, the Hooker-Oldbury [fol. 676] combination made a very formidable competitor. Likewise, the American Potash-Solvay combination made

a similarly formidable competitor. The fact that these two were expanding, one expanding the other building a new plant, I think gave us some real food for thought, particularly since it was in an area which we were considering at that time getting into.

Q. You say they were formidable combinations, I think that was the term you used, as competitors. You made reference to the AmPot-Solvay combination. Why were they formidable and what are you talking about?

A. The AmPot-Solvay combination was—Solvay with their chlorine dioxide process had a sales tool which they were using, along with their sales coverage, and were reselling American Potash production, as I recall it.

Q. You say along with their sales coverage. Sales coverage of what?

A. Of their selling organization, through their Solvay Division; that is, Allied Chemical Solvay Division, in the area to which we have been referring, the Southeast.

Q. Pursuant to PX-82 and PX-83, both of which I believe you have before you, after part one of this task force was completed the Arthur D. Little concern was commissioned to make a market study, as Mr. Land testified yesterday. Is that your recollection too?

[fol. 677] A. Yes, sir.

Q. Following that study there was a meeting held on November 6, 1957, reported in a memorandum of November 18, PX-99, which I show you. You are not listed as one of those who attended that meeting, Mr. Drake, although you got a copy of this memorandum apparently. D-11 got a copy.

A. I received a copy and I did not attend the meeting.

Q. Did you take any action pursuant to the copy you received, or do you have any recollection of what you did with specific reference to this memorandum and the meeting that you didn't attend?

A. I recall no action that I took at this time.

Q. I show you, Mr. Drake, Plaintiff's Exhibit 102, concerning a meeting on December 5, 1957, and ask you whether you recall that meeting.

A. Very definitely.

Q. Refreshing your recollection if you need to from the

memorandum, will you tell us what was decided at the meeting of December 5, 1957?

A. The first and most important thing that was decided finally was that we would not proceed further with the idea of a chlorate plant in the East. I am speaking now of solely chlorate, and doing it with Pennsalt's investment solely. That was the first and most important decision.

[fol. 678] Q. Was anything else then decided on?

A. There was then discussion as to how could we jell a chlorate plant, and there was discussion of the possibility of exploring with Olin Mathieson the possibility of interesting them in a joint venture.

Q. Was any other action authorized at this meeting of December 5, 1957?

A. The only other action authorized was to tell Mr. Shanaman to talk with Mr. Logan about the sale of chlorates from his production in the northwest to Olin Mathieson.

Q. Do you recall what the status of the western plant was at this time with reference to its capacity and whether or not it had excess production?

A. Yes. We had just recently increased capacity in the northwest, and we had some excess, which we always try to have when we increase any plant capacity. Sometimes, incidentally, we have a little too much. Therefore we felt that the combination of Fred Shanaman's immediate, at least, inability to sell the entire output of the plant, and the possibility of interesting Olin Mathieson in some form of a joint venture, one way of interesting them might be to talk to them about their handling on an introductory offer basis some of this excess production in the northwest, in the southeastern area.

[fol. 679] Q. Now, which came first, the decision you would not go forward with the sodium chlorate plant in the East on your own, or the decision to sell some chlorate to Olin, or the decision to pursue the possibility of a joint venture?

A. Our objective had been, and continued up to this point, to try to see some way that we could put in a chlorate plant on our own. At this point we had exhausted, to the best of our ability, any means as we saw it to do this on our own; so the first decision was not to do it ourselves, and having made that decision then we considered, "Well, now

if we cannot do it ourselves what is another way to do this?"

Q. Did you have available to you at that time any assurance that you would be able to get a joint venture with Olin Mathieson?

A. None whatsoever.

Q. Mr. Drake, I show you Plaintiff's Exhibit 103 and Defendants' Exhibit 7.

Mr. Drake, showing you now Plaintiff's Exhibit 103, first calling your attention back to 102, you see there is some handwriting on Plaintiff's Exhibit 102 up at the top?

A. Yes.

Q. It reads, as I make it out, "Will S-12 write memo after talking with J. Logan."

A. Right.

[fol. 680] Q. Who is "S-12"?

A. Fred Shanaman.

Q. This bears the initials underneath it D-11, at the top of it the initials W-1. Is this in your handwriting, that little notation?

A. I think not. It could be Mrs. Rabe's handwriting, who was Mr. Willits' secretary who may have been doing some work for me at the time, and undoubtedly I asked to make sure that Fred Shanaman kept me advised of what the outcome was of his discussion with John Logan.

Q. Did you receive any memorandum from Mr Shanaman about his talk with Logan other than PX-103?

A. No.

Q. Which is a copy of the letter which he wrote to Mr. Logan.

A. I think this was Fred's means of keeping me advised. "This" being PX-103.

Q. You also received a copy, I take it, of DX-7, a memorandum from Mr. Willits to the file of December 20, 1957?

A. Yes.

Q. Both of these make reference to the possibility of a meeting between Pennsalt representatives and Olin representatives in January or February.

I show you PX-111, and you have that too, I believe. [fol. 681] Do you find it?

I ask you if that is the first meeting you had between

Pennsalt representatives and Olin representatives pursuant to PX-103 and DX-7?

A. That is correct.

Q. Will you read the memorandum and then tell us whether it accurately reflects as you recall it what transpired at your meeting on February 3, 1958?

A. It certainly covers my understanding of the essence of that meeting, yes. I am not sure I would express it exactly the way he has, but it is the essence.

Q. At that meeting did either Pennsalt or Olin undertake or agree to restrict its freedom of action with reference to sodium chlorate, ammonium perchlorate, or the two products combined, or a plant to produce the two?

A. Not only was there no restriction of action, I think the events following this will bear that out, that this was merely a gentlemanly way of proceeding with no restriction as to whether or not we went alone on a project, or Olin went alone in a project. The gentlemanly thing to do would be to advise them if our decision was to go alone, and they, I would assume, would do the same to us.

There were no restrictions here. That is very important.

[fol. 682] Mr. De Lone: If your Honor is planning a recess——

The Court: We will take a recess for ten minutes.

(At this point a short recess was taken.)

By Mr. De Lone:

Q. Mr. Drake, I call your attention now to the subject of ammonium perchlorate, and refer you in that connection to Plaintiff's Exhibits 112 and 113. Would you tell us when Pennsalt first entered into the manufacture of ammonium perchlorate, or decided to enter into it, at least?

A. Well, the decision to enter into the manufacture of ammonium perchlorate on a small scale—I think it is important to recognize that the initial effort was really in the pilot plant; whether you can call that manufacture or not I don't know—was in the early part of 1958, as reflected in this press release which you have marked PX-112 and 113, the only difference being that one is the rough draft and the other is the final.

Q. As far as 112 is concerned, the draft of February 5, 1958, who prepared that draft?

A. From the hieroglyphics on it, it would appear that I had.

Q. PX-113, which it has been agreed that the best date we can fix it around is February 11th, is the release as it ultimately issued, is that correct?

[fol. 683] A. I believe so.

Q. Both in the draft and in the final release, PX-112 and 113, there is a reference to "Plans are also being made to build another larger unit at a yet unannounced location in the South." What did that have reference to, Mr. Drake?

A. We had been making some studies on, I believe it was, a 6,000-ton ammonium perchlorate plant. When I say studies, primarily an engineering study. No decision had been made. I want to emphasize that. It was really an investigation of what would the economics be of a 6,000-ton perchlorate plant in the Southeast.

Q. In this period beginning in 1958, with your pilot plant on the West Coast at Portland, did Pennsalt continue to study and consider the possibility of the manufacture of ammonium perchlorate at a southern location?

A. Yes.

Q. Was that considered in connection with ammonium perchlorate alone or in connection with a unit to make sodium chlorate, from which you would also make the ammonium perchlorate?

A. You would have to have—I say you would have to have; you could ship it in but it would be very uneconomical to do so—you would need to make an economical plant at least the amount of sodium chlorate required for the am-

[fol. 684] monium perchlorate. I believe it is a pound, or a little over a pound, of chlorate per pound of ammonium perchlorate.

Mr. De Lone: If the court please, I want to mark as an exhibit and show to the witness a memorandum dated July 9, 1958, on the subject of ammonium perchlorate. Through inadvertence, apparently, this was not included in the list of documents we have designated to the Government.

The Court: Is there any objection, Mr. Freed? Will you look at the document?

Mr. Freed: Mr. De Lone did show us the document during the recess. We have no recollection of having seen it before, and it was not designated. We have not had an opportunity to determine whether there are any other documents to which it relates, and we had simply proceeded on the assumption that the list of documents designated was in accordance with the court order to which defendants would be confined in their presentation.

The Court: Do you object or not to the document being marked and the witness examined on it?

Mr. Freed: May I have a moment, sir?

The Court: Yes.

Mr. Freed: We have no objection, your Honor.

By Mr. De Lone:

Q. Mr. Drake, I show you Defendants' Exhibits 8, 9 and 10.

[fol. 685] Defendants' Exhibit 8 is a memorandum from you to Mr. Shanaman dated July 9, 1958. Defendants' Exhibit 9 is a memorandum from Shanaman to you dated July 18, 1958, and Defendants' Exhibit 10 is the memorandum enclosed with Defendants' Exhibit 9, being the memorandum of July 18 from Karr to Shanaman.

The period of these documents, July of 1958, what was the status of your interest in the subject of ammonium perchlorate, and do these documents bear on it?

A. At first my greatest interest in ammonium perchlorate at this stage, inasmuch as we had made an investment in the northwest, small though it was at the time, was to see what we were going to do with this investment, were we going to be able to get a decent return on it, bearing in mind it was a pilot plant.

The only way we could get a return would be to expand it enough or put in a commercial plant which would return us the investment we made in the pilot plant operation. That was my first interest, I would say.

I also had the corollary interest of the continuing possibility of a perchlorate plant in the Southeast.

Q. On DX 9 there is some longhand which looks to me like yours.

A. It is.

[fol. 686] Q. Would you read that for us because it is not perhaps legible.

A. To "S-12" means to Shanaman. I returned this to him with the comment, "I would say that Errol's summary is encouraging. Let's keep close to this."

Those are my initials at the bottom. "Errol" being Errol Karr who wrote the report "Ammonium perchlorate" marked DX-10.

Q. Mr. Drake, I show you a series of documents PX-136, 139, 141, 142. Would you look at each of those and after you have looked at them would you tell me whether in September of 1958 or October of 1958 Pennsalt was still actively considering constructing a sodium chlorate plant alone, just a sodium chlorate plant on its own?

A. It very definitely was not. You could infer from these memoranda that, particularly the first one, PX-136, where the term "chlorate plant" has been, I think, rather loosely used.

Under Roman numeral IV, item (a) it refers to whether we will build a sodium chlorate plant, and if so, where.

If you keep on through these documents you will see that there has been a very loose use of the word "chlorate," "chlorates." In each of the instances we are [fol. 687] referring to the combination of an ammonium perchlorate-chlorate plant in the Southeast. No consideration was given to a sodium chlorate plant with Pennsalt doing it alone since our December 1957 meeting.

Q. These documents indicate that this is an item to be discussed, and as PX-142 shows, it makes reference to a meeting of October 22 to conclude what if anything we should do on chlorates in the Southeast.

I show you in that connection PX-143, a memorandum of a meeting held on October 27, 1958, and I also show you PX-146, a memorandum of a meeting held on November 3, 1958. Is the discussion reflected in the minutes of PX-143, the meeting of October 27, 1958, the first general discussion in the fall of 1958 among the management group of Pennsalt of the possibilities of Pennsalt alone constructing a combined sodium chlorate-ammonium perchlorate plant East of the Rockies?

A. As I recall the meeting that took place three years

ago, approximately, I think this reflects, to the best of my recollection, what took place at that meeting, yes, what was discussed.

Q. And that was followed by the meeting on November 3, PX-146, which was the subject of some discussion here yesterday. Do you recall attending the meeting of November 3, 1958, reported in PX-146?

[fol. 688] Do you have the question?

A. You asked if I recall attending the meeting. Specifically I don't recall attending the meeting.

Q. Perhaps if you would look at the summary on page 3, item 2 states:

> "Mr. Drake will apprise the board of the proposed plans for production and marketing of sodium chlorate and ammonium perchlorate in the East; specifically the proposed plant at Calvert City is to have a capacity of 30,000 tons per year of sodium chlorate, 10,000 tons per year of ammonium perchlorate."

I am not sure that all copies of this show what is on the court's exhibit, which is a notation in the margin opposite that which shows "done, 11-3-58," in your handwriting, I believe.

A. That is correct.

Q. Does that call to mind whether you did attend this meeting on November 3, 1958?

A. Can I answer this in this way. Obviously I was there. Whether physically I recall what time I walked in the door and what time I left, I don't.

Q. I'm sorry, Mr. Drake. If my questions indicated I wanted that information, I didn't pose the questions properly.

[fol. 689] Would you just go ahead in your own way?

A. I obviously did attend this meeting, which was a further discussion of the possibility of a combined chlorate-perchlorate plant in the Southeast. I stated at that meeting that I would mention this to the board at its next meeting, which was held, I believe, on November 3, 1958, and I did mention it to the board.

I think it is important to bear in mind that I simply mentioned it to the board, as I was accustomed to do on any

thinking of this nature, on any project, merely to keep them advised of what we were thinking about.

Q. Did you at that meeting make a decision to go ahead with an ammonium perchlorate-sodium chlorate plant for Pennsalt alone at Calvert, with the capacity described in the memorandum?

A. No, sir.

Q. What was the decision at that meeting, if there was a decision?

A. I think in effect the decision was to pass this buck, as it were, to Mr. Drake, for him to make a decision as to whether we were to proceed further with it, as reflected in item 3 on page 3 of the document market PX-146.

Q. That says "Mr. Drake will make final decision to authorize action and expenditures." Under that is, "Central Engineering immediately to design and engineer." Did you [fol. 690] ever authorize Central Engineering to design and engineer, or an appropriation request for this project?

A. As I recall the cost of such an engineering study was approximately $200,000, and I did not authorize such an expenditure.

Q. The next of these items that you were to authorize action and expenditure for was, "Industrial Division immediately to plan, organize and undertake entry into the Southern and Eastern pulp and paper markets." Did you subsequently authorize that?

A. I did not. To my knowledge it was not done.

Q. Next, "Western Division immediately to plan, organize and undertake more extensive sales and promotional coverage of the ammonium perchlorate purchases." Do you know whether that was done?

A. I think an effort was made to do that, yes.

Q. And the last, "Public Relations immediately to prepare press releases to publicize both the Portland and the Calvert City expansions, both as follow-ups of previous announcements."

A. I don't recall that that was done.

Q. Did you ever subsequent to this date, November 3, 1958, finally authorize proceeding with a combined sodium chlorate-ammonium perchlorate plant for Pennsalt on its [fol 691] own, East of the Rockies?

A. No, sir.

Q. Why not, Mr. Drake?

A. For two reasons. First, such a plant would have to be proposed—I wouldn't say have to be; normally it is proposed by someone other than myself. No such plant was proposed specifically.

Secondly, I think there were too many holes in this thing to have approved it, had it been proposed. There were inconsistencies which I felt; you can call it intuition, whatever you want to call it. We were not ready. As I saw it, this was not a project that would be profitable for Pennsalt. The risk was too great for the amount of profit guesstimated. I say that wisely because it was a guesstimate more than an estimate, in my estimation. For that reason there was no approval given.

Q. Mr. Drake, item 9 on page 2 and the top of page 3 comments about 10% of PCC—that's Pennsalt Chemical Corporation—current sales are in the pulp and paper with the proposed expansion of chlorates this would be about 15% in 1953.

Was this factor considered by you in deciding whether or not to authorize further action in this regard?

A. I think the fact that that was mentioned in PX-146 [fol. 692] reflects a question which was constantly in my mind, and I raised it at this time as to what such an expansion if put through, when added to our then present sales to the pulp and paper industry, would make our total sales in relation, that is, total sales to the pulp and paper industry, in relation to our over-all corporate sales.

Experience is very helpful. One of the experiences we had in our company not many years ago was to get dependent upon a given industry. In fact, if you look at those figures that we looked at earlier this morning in return on shareholders investment you will note that the years 1950 and 1951 were exceedingly good, and they were exceedingly good because in the year 1951 particularly, and partially in 1950—or the other way around, 1950 and 1951—about 25% of our earnings were derived from agriculture chemicals. That was fine. That was two and a half million dollars of earnings before taxes. Two years later agricultural chemicals showed a loss.

Now, a company of our size cannot take a swing of that magnitude without really feeling it. Therefore, that expe-

rience has prompted me from time to time to determine as best we can, depending upon the stability of a given market, the growth potential of a given market as well, how dependent we are on that market.

The yardstick we have tried to use in regard to the [fol. 693] pulp and paper industry, and bear in mind this is a yardstick, is about 15% for the over-all company. Obviously up in the northwest it is more than that, of their total activity.

But I think that is an important factor and is one of those factors which would go through my mind normally in evaluating a project of this sort. Fortunately this would not take us over 15%. Bearing in mind that we have growth requirements for chlorine and caustic continuously as the pulp and paper industry grows, so long as that investment in chlorine and caustic is profitable we intend to grow with it.

Q. The 10% figure reflected here, 10% of current sales are in pulp and paper, is that in a particular part of the country?

A. That is the whole company.

Q. Where, if you know, was the bulk of that 10%?

A. The bulk of it was in the Northwest; a very small part of it, I believe, was up in the Wisconsin-Minnesota area.

(A copy of the Appropriation Committee meeting No. 12, dated December 23, 1958, was marked "Defendants' Exhibit No. 11 For Identification.")

By Mr. De Lone:

[fol. 694] Q. Mr. Drake, I show you Defendants' Exhibit 1, Plaintiff's Exhibit 148, Defendants' Exhibit 11, and Plaintiff's Exhibit 151. Have you had a chance to look them over while we have been thinking things out down here?

A. Yes, I have.

Mr. Freed: Your Honor, with respect to Defendants' Exhibit 11, which are the minutes of the Appropriation Committee meeting No. 12, dated December 23, 1958, this document was not on the list of documents furnished by

the defendants to the Government in accordance with the court order, but we will waive our objection to its admissibility.

Mr. De Lone: Thank you. We have a mass of those minutes that have all been reviewed by both sides.

By Mr. De Lone:

Q. Mr. Drake, after reviewing those documents would you tell us what became of the ammonium perchlorate-sodium chlorate plant at Calvert which had been projected in PX-146 at the time of your meeting of November 3?

A. The best way I can express it is that our interest waned in a joint chlorate-perchlorate plant for Calvert City.

As to why, which would obviously be the next question, I think one of the answers can be gleaned from D-1, item 2.

When you become faced with such statements as to the [fol. 695] possibility of the double accounting exists in the several estimates of future demand for ammonium perchlorate obtained from the rocket engine manufacturers it shakes your confidence a bit in just what this market may amount to. I think this in itself would be reason for pause.

Q. Mr. Drake, was the ability in these projections discussed on November 3, 1958, was the ability of these projections to equal your standard for return on the investment in any way dependent on the ammonium perchlorate side of the projected combined ammonium perchlorate-sodium chlorate plant?

A. I think to say that it was in any way dependent would be putting it very mildly. The whole project depended upon the marketability and the profitability of the ammonium perchlorate, the latter being only the result of the former, getting profits from the market.

Q. Why do you say the whole project depended on that? The plan under discussion, PX-146, was to make 30,000 tons of sodium chlorate and only 10,000 tons of ammonium perchlorate?

A. That is correct, but the profitability of the project. Sure, you will get some profit from your chlorate, but the real nub of the investment was the perchlorate. The whole investment depended upon our ability to sell 10,000 tons of ammonium perchlorate.

Q. At what price?

[fol. 696] A. At the then market price. My recollection is that some of the figures showed 38¢ a pound; then it was reduced to about 32¢ a pound.

Q. Do I correctly understand your answer to mean that without the sales of ammonium perchlorate projected in those figures that were under discussion back on November 3, 1958, at the prices then projected, the return on this project would not come up to your investment standards?

A. That is correct.

Q. You were explaining what had happened to it, and I interrupted. Perhaps there is something further you wanted to comment on with reference to my initial question.

A. Well, I think it is a corollary comment that as we became less enchanted with the possibility of selling perchlorate out of an eastern operation, and yet with the feeling that we wanted to keep our finger in the perchlorate pie, along came a proposal from Fred Shanaman to construct a commercial, a small commercial plant, in the northwest, namely, a plant for 2,000 tons of ammonium perchlorate, and incidentally some chlorate to go along with it. That was incidental to it.

Our feeling therefore was with the real question about the market that our best bet would be to go along in the northwest with a minimum plant and sort of feel our way to see just how this market would develop. And I might [fol. 697] add I thank the Good Lord that we did it just that way because we aren't even running the northwest plant at capacity today; that is, the perchlorate plant.

Q. And that is a capacity of how many tons?

A. 2,000 tons.

Q. Whereas you were discussing here a capacity of 10,000 tons of ammonium perchlorate back on November 3, 1958?

A. That's correct.

Mr. Freed: Your Honor, I wonder if the reporter might read back the question and the beginning of Mr. Drake's answer?

(The reporter read the requested portion of the testimony.)

By Mr. De Lone:

Q. I don't know whether you finished your whole answer, Mr. Drake. We have been interrupting you too much perhaps.

A. There was one other small factor, and that was the consideration we had for renegotiation, which at that time we asked Mr. Willits to look into, as I recall it. But that I think was an incidental factor, important but incidental to the other two.

Q. Insofar as your projections of your profitability and your return on investment for the combined chlorate-perchlorate plant at Calvert were predicated on a price struc- [fol. 698] ture, renegotiation would be a factor as to the validity of those projections, would it not?

A. Yes, sir.

Q. If you will look at PX-148, the management committee meeting No. 90, November 13, 1958, there is a reference there under Capital Projects to Ammonium Perchlorate plant. "Mr. Drake stated Mr. Shanaman plans to have this submitted in time for the December 3rd board meeting."

Is that the 2,000 ton per year ammonium perchlorate expansion in Portland to which you have just made reference?

A. Yes, sir.

Q. In DX-11, the Appropriations Committee Meeting No. 12 of December 23, 1958, under item B, joint chlorate and perchlorate expansion following the initials PSW, 086P, is that reference to the Shanaman proposal or a sodium chlorate ammonium perchlorate plant at Portland?

A. PSW is Portland. The 086P designates Portland.

Q. PSW, what does that mean?

A. Pennsalt West.

Q. Now calling your attention to PX-151, management committee meeting No. 93, of January 9, 1959, the second item, budget, says the capital budget that was reviewed and approved at the Barclay meeting was reapproved for 1959. The only major addition was the West Coast chlorate plant. [fol. 699] What are we talking about there? Is that the same Shanaman 2,000-ton ammonium perchlorate plant?

A. We are still in the same bind that we were in earlier when we had this series of documents in which we referred

to chlorate-perchlorates, when we were all talking about the same thing.

I think unquestionably this is the same error that we made. We are obviously talking about the perchlorate and the chlorate, and there was a chlorate expansion at Portland at that time.

The Court: Perchlorate and sodium chlorate?

The Witness: Perchlorate and sodium chlorate for Portland.

By Mr. De Lone:

Q. As I understand it, Mr. Drake, and I believe there are stipulations on this which I can't immediately refer to, or interrogatories, the West Coast plant at Portland was increased in sodium chlorate capacity from a little over 12,000 tons to 15,392 tons, that having come on stream in 1959. And in the same period an ammonium perchlorate capacity was added at the same plant for 2,000 tons. Is that the thing that we are talking about in these minutes?

A. I believe it is.

Q. Mr. Drake, I show you Plaintiff's Exhibit 155, and [fol. 700] ask you if that is the press release announcing this same West Coast expansion which was under discussion in these meetings to which I have just recently directed your attention?

A. I believe it is.

Q. Mr. Drake, I call your attention now to Plaintiff's Exhibits 154 and 160, the latter being a letter from Mr. Logan to you dated February 27, 1959, the former the minutes of a Management Committee meeting held on Friday, January 23, 1959.

Mr. Logan's letter to you in the opening paragraph says:

> "We have brought up to date our information on power available at Brunswick, Georgia, as you and I discussed in New York last month."

Have you had a chance to look at the documents before I proceed any further?

A. I have looked at the document to which you are now referring.

Q. Do you recall the subject of a meeting or discussion

that you had with Mr. Logan in New York presumably in January, in light of his reference to "in New York last month"?

A. No. I think I testified in my deposition I do not recall the specific meeting. I think it probably was a chance meeting, probably at a convention, or the Chlorine Insti-
[fol. 701] tute meeting, which normally is held about the third week in January. Undoubtedly at that time this question arose about the Brunswick, Georgia, situation.

Q. Do you recall whether at any time subsequent to February 3, 1958, when you, Mr. Land, Mr. Shanaman and Mr. Logan had met in Philadelphia on this date, whenever it was, in January of 1959, you had had any further meetings or discussions with Mr. Logan about joint venture possibilities?

A. I do not recall any in that period.

Q. In Plaintiff's Exhibit 154, which is a meeting of January 23, or the minutes of a meeting of January 23, will you look at item 2 which makes specific reference to conversations had again been made with Olin Mathieson on the subject of a joint venture at Brunswick. Do you see that?

A. I do.

Q. Do you attend the Appropriations Committee meetings?

A. I do.

Q. Does that refresh your recollection in any way about your conversations with Mr. Logan in January of 1959?

A. As I stated earlier, the meeting to which John Logan refers undoubtedly took place at the Chlorine Institute. I am pretty sure it must have been at the Chlorine Institute because it would be something to which we would normally go, and since I believe that usually occurs in the third week
[fol. 702] of January my reference to discussions with Olin Mathieson in PX-154, item A-2, that reference is undoubtedly to the meeting, the chance meeting, I had with Logan in New York a few days before that.

Q. Did you at this same Appropriations Committee meeting No. 15 of January 23, 1959, discuss or give any thought to the possibility of a joint venture with Olin Mathieson on chlorate-perchlorate?

In that regard I call your attention to page 2, paragraph B-3.

A. I would appreciate it if you would read or someone would read back the first part of that question. I got a little lost.

(The last question was read by the reporter.)

The Court: Chlorate-perchlorate?

Mr. De Lone: That is the language I used. Sodium chlorate-ammonium perchlorate.

The Court: Let us have that clear so we do not have confusion in the record which you are suggesting exists in the document.

Mr. De Lone: Yes. Substitute that simply in the question without going through the rest of it.

The Court: You have directed Mr. Drake's attention to paragraph number 3?

[fol. 703] Mr. De Lone: Yes.

The Witness: The answer is obviously yes, we did discuss the possibility of a joint venture in the East with Mathieson, and as a result of such a discussion Dr. Lalande was asked to prepare some data.

By Mr. De Lone:

Q. The discussion to which you just now referred out of Appropriations Committee Meeting No. 15 was internal to Pennsalt entirely, just the Pennsalt people at that meeting?

A. That is correct.

Q. Reference to this request to prepare data, do you know whether the data was prepared? Can you tell from any of the notations—there are some longhand notations.

A. No. These all refer to checking up on LaLande to see whether he prepared them or not. Darned if I can remember whether he had or actually did prepare them or not. My guess would be that he di, but I am not supposed to guess, I believe.

Q. Did you subsequent to this meeting of January 29—I am sorry, of January 23 in PX-154, did you pursue further with Mr. Logan and/or anyone else of Olin the possibility of a combined sodium chlorate-ammonium perchlo-

rate joint venture with Olin other than as reflected in the letter PX-160 which I have already shown you, and also as reflected in the letter PX-163 which I now show you, being [fol. 704] a letter from Logan to Drake on April 7, 1959?

A. Before you show this to me, I was about to say that the only further discussion we had had that I can recall is an exchange of probably phone calls and letter referring to possible sites for a joint sodium chlorate-ammonium perchlorate venture.

Q. Did you ever settle on a site?

A. Not at that time.

Q. Have you ever to this day settled on a site for a sodium chlorate-ammonium perchlorate joint venture?

A. No.

Q. Did you pursue the subject any further as you recall of either a Pennsalt alone sodium chlorate-ammonium perchlorate plant East of the Rockies, or a joint venture with Olin in the same type of plant following this exchange of correspondence running at least up to April of 1959, any time after that did you pursue it further?

A. I would like you to repeat what it was that you are questioning did I pursue.

Q. I want to know whether you or Pennsalt to your knowledge pursued either a combined sodium chlorate-ammonium perchlorate plant on its own, or a joint venture in the same type of plant with Olin Mathieson subsequent to April of 1959.

[fol. 705] If my question is not clear make me ask it again.

The Court: Break it down into two parts. You asked a double question.

Mr. De Lone: Thank you, sir.

By Mr. De Lone:

Q. Did you pursue so far as Pennsalt alone is concerned, after April of 1959, the possibility of either constructing an ammonium perchlorate-sodium chlorate plant East of the Rockies?

A. The word I stumble a bit on is what do you mean by "pursue"?

Q. Did you progress it?

A. Did we give any more thought to it?

Q. I suppose it is not entirely out of your mind, but did you do anything? Did you have any meetings, discussions, make any decisions with reference to it?

A. I do not think we did anything of that sort. I could not honestly say it went completely out of our minds, I do not think that would be honest.

Q. That is not within my definition of "pursuit".

A. That is all I wanted to clarify, we were talking about the same thing.

Q. Using "pursue" in my sense, did you pursue the combined chlorate—the combined sodium chlorate-ammonium perchlorate plant joint venture with Olin idea subsequent to [fol. 706] this plant site discussion in the spring of 1959 that you previously referred to?

A. No. There was a void between roughly April of 1959, when there seemed to be no further consideration.

Q. Mr. Drake, when did the subject of a chlorate plant in the East, either alone or jointly, when did the subject of a chlorate plant in the East, without regard to how it was to be accomplished, next become an active one as you recall it and under what circumstances?

In that regard I show you PX-172, 173, and 174.

A. I was out on the West Coast in the fall of 1959 visiting in the Northwest. During that time Fred Shanaman raised the question, "What has ever happened to the thought we kicked around about chlorates with Mathieson? I had been supplying some material for them for an exploratory market study, now they have asked for 3,000 tons for the following year, 1960, and I can sell those 3,000 tons," or this is the gist of his discussion, "Is anything going to happen with Olin Mathieson, and if not I don't want to supply them with the 3,000 tons."

That is reflected in my memorandum to Land and Dr. LaLande.

Q. That 3,000 tons of sodium chlorate—you mentioned "chlorates?"

[fol. 707] A. He asked about the chlorates. I spoke of chlorates loosely, I am afraid. Obviously he is talking about sodium chlorate. That is reflected in PX-172.

I asked, and I think this is important, I asked Land and

LaLande to dust off their files and plan to discuss this with me on Thursday, November 19.

Q. Do you recall whether it was so discussed on Thursday, November 19?

A. In the meantime Mr. Walker, who was then an administrative assistant to me, I asked him to bring this whole picture up to date as best he could, which he did in his memorandum to me dated December 14, 1959, which is marked PX-173.

Q. Incidentally, when did Mr. Walker become your administrative assistant?

A. A short time before that, and I think in fairness to him I should add that the purpose of this request to him was twofold. One, I did want to get boiled down what the present status of this might be, and secondly, I wanted his boiling down as a part of finding out what his thinking might be, he looking at this from an entirely fresh viewpoint.

Q. From what you have said, I take it he had had no previous contact with this matter at all?

A. He had not, to my knowledge. The assignment of an [fol. 708] administrative assistant is partially a training assignment, and one of the training steps—I think this is important—was to see how the fellow thought, how he could do a thing like this. So the purpose was twofold.

Upon receipt of that summary, actually nothing happened. We did not have the meeting which I had called for December 17th, I believe it was.

Q. PX-172 has reference to "Discuss this with me on Thursday, November 19."

A. November 19th. And the sequence of events which is next brought out in PX-174 was a memorandum from Mr. Hugh Land, who was then general manager of the Industrial Division East, in which he refers to the November 17th meeting, which we didn't hold, and then summarized in his own estimation certain observations regarding chlorate in the East.

[fol. 709] The Court: Mr. De Lone, I don't want to cut short your presentation in any way, but are you adding much to your case simply to have Mr. Drake make a summarization of these papers? They do speak for them-

selves. If he can testify to matters not reflected in the papers, then I can understand the significance, but simply to give a summarization of what the papers contain doesn't seem to me to further the situation.

Mr. De Lone: I agree with your Honor. I didn't mean to have a re-reading just of the exhibits, and I will try to avoid that.

By Mr. De Lone:

Q. Mr. Drake, did you come then to have a meeting with Olin Mathieson on this subject of a possible joint venture in sodium chlorate?

A. Yes.

Q. Do you know how that meeting was set up? Are you able to fix the time when it was set up?

A. It was early in January.

Q. It was set up early in January?

A. I believe so.

Q. The meeting itself is reflected in Plaintiff's Exhibit 186, which I think you have there, is that correct?

A. That is January, 1960.

The Court: You are speaking of the meeting of Janu-
[fol. 710] ary 21, 1960?

Mr. De Lone: Yes, sir.

By Mr. De Lone:

Q. Will you look at the memorandum of the meeting of January 21, 1960. Have you a copy of it there?

A. I do.

Q. Can you add anything to Mr. Clem's minutes of what transpired at that meeting? Does that give the essence of what went on as you remember it?

A. I believe it reflects the discussions at the time of that meeting.

Q. Next, so far as you are concerned, was the signing of the letter of intent, or the letter agreement of February 11, 1960, which is PX 175, is that correct?

A. Yes, sir.

Q. Mr. Drake, there has been mention here of the fact that in these meetings Pennsalt brought some figures to the meeting of January 21. There has been some discus-

sion of that in court. Do you recall whether those figures concerned a sodium chlorate plant or a plant which would produce both sodium chlorate and ammonium perchlorate?

A. As I recall it, they referred only to sodium chlorate.

Q. And as constructed, does the plant of Penn-Olin have any facilities for making ammonium perchlorate?

[fol. 711] A. None whatsoever.

Q. Mr. Drake, I show you Plaintiff's Exhibit 244, which bears in the upper left-hand corner the legend, "Approved, 8-3-60," and ask you what that document is, if you know.

A. That is a summary which we make up prior to a Board meeting, which we send to the members of the Board for their consideration prior to request for action at the ensuing Board meeting. This one deals obviously with the investment in the Penn-Olin Chemical Company, Pennsalt's investment as well as the total investment.

Q. Did you take this subject to the Board with this memorandum in August of 1960?

A. I did, and they approved it.

Q. I note on the memorandum itself it shows return on investment, before-tax basis, 15% to Penn-Olin, 25% to Pennsalt. Would you explain the difference?

A. Yes. This is extremely important to the whole venture as I see it. The only way this is made possible, insofar as Pennsalt is concerned, is that in a minimum amount of equity the two partners can invest in this joint venture and borrow the substantial portion of the capital required to build and operate the plant. The leverage that you get on the minimum investment is reflected in the 25% return on Pennsalt's investment of $1,000,000, as against only [fol. 712] 15% on the overall project, these both being before taxes.

Another factor is that you do not in a joint venture of this nature, when it is 50-50 owned, need to reflect on your own balance sheet the obligation of the jointly owned subsidiary. This is another way, in a sense, of borrowing money without having to reflect it on your balance sheet.

By the Court:

Q. Is it too much of an accounting question to ask you whether it is not customary to reflect the obligation of a subsidiary in some sort of a notation on the balance sheet?

A. Sometimes it is done. Normally, on a 50-50 venture I believe more times it isn't than that it is.

Q. It's the sort of thing, though, that you would normally expect any informed person, or a person wishing to be informed, to make inquiry about, isn't it?

A. Well, technically the obligation is not to the parent; it is only to the subsidiary; and that is the basis on which the lender makes his loan.

Q. Yes, of course; the credit of the parent is not involved. That credit is affected by the value of the investment in the subsidiary.

A. I know there are occasions, however, where a footnote on the balance sheet is made. That has happened. Of course, when you have more than 50% ownership you [fol. 713] would have to do it.

Q. You consolidate them?

A. Yes.

By Mr. De Lone:

Q. Subsequent to your obtaining approval from the Board on August 3, 1960 of Penn-Olin Chemical Company, did you have occasion to meet with the Olin personnel with reference to the future of the joint venture, in the course of a few days thereafter, in August, 1960?

A. We certainly did.

Q. What was the subject of that meeting, and what transpired?

A. The subject of that meeting was, should the project be continued, and the question that was raised, principally on the part of Olin Mathieson, which they conveyed to me —I happened to be up in Maine at the time and came down for the meeting with Mr. Osborne and his associates—they were concerned with several items. First, the return on investment. Secondly, the action of the Hooker-Oldbury combination to offer five-year contracts in the southeast, which in itself was to our minds a reflection of the added competition that we were bringing forth, but nevertheless if it held any water it might keep us out for a period of five years.

And, of course, the third topic which was at least [fol. 714] touched on lightly was the Justice Department's interest in the venture.

Those were the three items.

Q. As a result of that meeting was there any change made in the Penn-Olin setup or plan? I show you in that respect PX257.

A. Yes, there was. We changed somewhat the scope of the project and in so doing reduced the total investment by about $300,000, which in turn increased the overall return from the original 15% to 19%, and our share, as well as Olin Mathieson's share, return from 25% up to 31%, which, of course, made the project look better from a return on investment standpoint.

Q. Do you recall what was eliminated in order to get this reduction in total investment of some $300,000?

A. As I recall it, it was mostly drumming facilities.

Q. Does the plant as constructed have any drumming facilities?

A. I don't think so.

Q. I note too, Mr. Drake, that in PX 244 it shows a capacity of 25,000 tons in the first paragraph, and PX 257 shows 26,500.

A. That's correct.

Q. That too would have the effect——

[fol. 715] A. On the review of the project they found that they could go up to 26,500, where originally they were more conservative on the 25,000.

Q. Did you then take 257 to your Board for approval?

A. I did, and they approved it. I asked at that time for $1,500,000 instead of the original $1,000,000.

Q. Mr. Drake, in your arrangements and discussions with the personnel of Olin, or the personnel of Penn-Olin, in which you participated, has there been any agreement or understanding with reference to any limitation on where Pennsalt may operate with reference to the sale of sodium chlorate or with reference to where Penn-Olin may operate with reference to the sale of sodium chlorate?

A. Absolutely no, and for a very good reason. The responsibility for the sale of the output of the Penn-Olin plant, as we have developed it, is that of the Olin Mathieson Chemical Company. The responsibility for the sale of our own plant at Portland is that of Pennsalt Chemicals Corporation. Now, if we are to assign those responsibilities we can't say, "You can do this but . . ." They must

have the responsibility and have the responsibility to sell the output of that plant, either plant; that is, Olin Mathieson in the case of the Penn-Olin plant, and the Pennsalt organization in the case of the northwest plant, anywhere they can sell it.

[fol. 716] Now, practically, if they can sell it close by they are going to sell it close by because they won't have to eat up freight. If they have to go far afield, they will go far afield, I hope.

Q. Mr. Drake, did the management of Pennsalt—and would it be fair to say that the management of Pennsalt and Mr. Drake are somewhat synonymous since 1955?

A. I have been instrumental in the operations of the company, if that's what you mean.

Q. Did the management of Pennsalt ever approve, since 1955 when you became its executive vice-president, either an appropriation request or an item for inclusion in the corporation's plan for future growth, a five-year plan, a sodium chlorate plant for Pennsalt alone at a location east of the Rockies?

A. No, sir.

Q. Did the management ever similarly approve an ammonium perchlorate plant for Pennsalt alone in an area east of the Rockies?

A. No, sir.

Q. Is the same true with reference to a combined sodium chlorate-ammonium perchlorate plant east of the Rockies for Pennsalt alone?

A. The same is true.

[fol. 717] Q. Has anything occurred since 1960 which would have induced you to approve such a project, any one of those three that I have mentioned, were it not for the existence of Penn-Olin?

A. No, sir.

[fol. 718] The Court: I don't understand that last question. Will you read it back.

(The last question was read by the Reporter.)

The Court: I thought all of your preceding questions presupposed an individual venture.

Mr. De Lone: They did. Obviously my last question is

not clear, and I think I had better pursue it further then.

The Court: I don't know what the significance of the answer is if I don't understand the significance of the question. But let it stand if you wish.

Mr. De Lone: It has been answered now. I think I had better pursue it further so we can clear it up.

By Mr. De Lone:

Q. Mr. Drake, has anything occurred since February 11, 1960, which has made any one of these projects more attractive?

The Court: Which projects are you talking about, the individual effort?

Mr. De Lone: The sodium chlorate plant alone, an ammonium perchlorate plant alone, and alone—I had better start again.

The three projects I have in mind are a sodium chlorate plant for Pennsalt alone east of the Rockies, an ammo- [fol. 719] nium perchlorate plant for Pennsalt alone east of the Rockies, or a combined sodium chlorate-ammonium perchlorate plant for Pennsalt alone east of the Rockies.

By Mr. De Lone:

Q. Has anything occurred since the beginning of 1960 that has made any one of those three projects more attractive to Pennsalt than they were at the beginning of 1960?

The Court: State the grounds of your objection, if you have one.

Mr. Freed: The government objects to that question on the grounds it is too speculative, particularly in light of the testimony of the witness that no consideration was given to these projects once the joint venture agreement had been entered into.

If Mr. De Lone can lay a basis for the corporation having considered these projects then perhaps there is a basis for an answer.

The Court: I will overrule the objection and consider it in the light of all the evidence.

By Mr. De Lone:

Q. Can you answer the question now, Mr. Drake, or would you like it repeated to you?

A. Nothing has happened since the early part of this [fol. 720] year, January, I think you said——

Q. Mine was 1960.

A. Of 1960.

—that would have induced us to go ahead with any one of the three projects.

The Court: Mr. De Lone, was that the purport of the question which I said I did not understand?

Mr. De Lone: I thought it was.

By the Court:

Q. Is that the purport of your answer to that question I didn't understand?

A. Yes.

Mr. De Lone: I am afraid I misled both the Court and counsel for the plaintiff. I apologize for the awkward phraseology.

I have no further questions of the witness.

The Court: We will adjourn or take a recess until half past 2:00.

(At this point the trial was recessed, to reconvene at 2:30 p.m. the same date.)

[fol. 721] 2:30 o'clock p.m., The same day.

PRESENT:

As before noted.

The Court: You may proceed, Mr. Freed.

WILLIAM P. DRAKE, resumed.

Cross-examination.

By Mr. Freed:

Q. Mr. Drake, this morning there was a good deal of testimony about final decisions by Pennsalt in the field of sodium chlorate. Have you reviewed the papers and the records in this case to determine just how many final decisions, so-called final decisions, Pennsalt made in the area of sodium chlorate prior to 1960?

A. Yes.

Q. Can you tell us the number of final decisions, or the occasions on which final decisions were made in the field of Pennsalt's interest in sodium chlorate?

Perhaps to save you from the trouble of recalling specific instances I can address your attention to particular documents.

[fol. 722] You were shown this morning Plaintiff's Exhibit 66, which was a memorandum dated March 8, 1955. I believe you testified that that report resulted, as indicated by the handwritten notes at the top, in Pennsalt putting sodium chlorate to bed. Is that correct?

A. That is correct.

Q. Do you have before you Plaintiff's Exhibit 70? Plaintiff's Exhibit 70 is an extract from Management Committee Meeting No. 40.

A. I do not believe I have that. Somebody very kindly put these in numerical order. No. 70 is not here.

Q. It is dated July 3, 1956. I show you a copy of that exhibit and ask you whether sodium chlorate came out of bed in the middle of 1956 as far as Pennsalt was concerned?

A. Yes, and for a very good reason.

Q. Yes?

A. The Puerto Rican idea came into the picture. The Puerto Rican idea being maybe this is a way to do this, by putting the plant in Puerto Rico, and thus have a tax advantage which would make the return more commensurate with our standards.

Q. Following the raising of the Puerto Rico possibility what did Pennsalt do with respect to Puerto Rico?

A. Found it was impractical.

[fol. 723] Q. The decision on the part of Pennsalt was?

A. To put it back to bed.

By the Court:

Q. Before you leave this Plaintiff's Exhibit 70, at the same time when it was decided to look at the possibilities of a sodium chlorate plant in Puerto Rico you also determined, did you not, to have another look at the wisdom of such a plant at Calvert City?

A. Yes, I think that would be a natural thing to do, if for no other reason than the comparative propositions.

By Mr. Freed:

Q. When you testified that the Puerto Rico study put sodium chlorate back to bed, did it also put Calvert City back there?

A. I believe so.

Q. I next direct your attention to Plaintiff's Exhibit 71, which I believe you had from this morning. I believe your testimony this morning was that sodium chlorate was revived by the Oldbury announcement on December 17, 1956. Is that correct?

A. That is correct.

Q. It was that revival, triggered in the month of December, 1956, that caused the whole sodium chlorate subject to be opened again for the next year, is that correct, [fol. 724] until December 5, 1957?

A. In general terms, yes, I think that is correct.

Q. I believe you next testified that Plaintiff's Exhibit 102 was the final decision, or perhaps the third one now, with respect to dismissing sodium chlorate as a lone venture on the part of Pennsalt on December 5, 1957. Is that correct?

A. Yes.

Q. Do you recall when the possibility of Pennsalt's entering sodium chlorate in the East next arose?

A. This is Pennsalt alone now?

Q. This is Pennsalt alone, but addressing your attention to any kind of project which would involve the manufacture and sale of sodium chlorate in the East.

To refresh your recollection I would like to direct your

attention to Plaintiff's Exhibits 112 and 113, which are the draft of the press release dated February 5, that is the draft, and the final release February 11, 1958, when Pennsalt made an announcement of a possible chlorate facility at an unannounced location in the South.

Am I correct in recalling that your testimony was that this again brought the subject of sodium chlorate by Pennsalt alone, possibly in combination though with the product ammonium perchlorate, back into consideration?

[fol. 725] A. Yes, actually I think it was somewhat before this date of February of 1958 because I believe I testified that we had asked the Central Engineering Group to get some rough estimates on a perchlorate plant for Calvert City in conjunction with sodium chlorate.

Q. Can you recall when prior to February 5, approximately, that request was made?

A. No, I cannot.

Q. It was some time between the final decision of December 5, 1957, and the press release of February 5, 1958?

A. I believe it was.

Q. The consideration which began in early 1958 for a sodium chlorate facility in the East in conjunction with ammonium perchlorate lasted again until some time in 1959. Is that correct?

A. I checked these—Pardon me for looking at these but I am terrible on dates and I do not want to make a misstatement here.

Yes. That is correct.

Q. Directing your attention next, Mr. Drake, to the subject of Pennsalt's consideration of a joint venture involving sodium chlorate and also involving Olin Mathieson Chemical Corporation, I believe you testified—perhaps you can tell us. What was the earliest date that you know the [fol. 726] subject of a joint venture with Olin was discussed by representatives of Pennsalt and Olin?

A. That's the one I stumbled on this morning. I think it was some time in 1956 that it came to my attention through Fred Shanaman. Can I check these for just a moment?

Q. By all means. I believe there is a reference to it in Plaintiff's Exhibit 73, dated December 27, 1956, which contains the sentence, "Incidentally, the last time we talked

with Olin Mathieson about building a chlorate plant they told us they had investigated the possibility of building a plant in the East and that their cost figures, both capital and manufacturing, were surprisingly close to ours."

That document would fix the date of a prior meeting with Olin some time in 1956. Whether or not that was the first meeting we don't know.

A. That is the one I was trying to recall. I don't have the document here; I don't seem to be able to find it. Is this the Shanaman document?

The Court: What exhibit was it?

Mr. Freed: Plaintiff's Exhibit 73, a memorandum from Mr. Land to Mr. Drake, December 27, 1956.

Mr. De Lone: May I supply you one of these, Mr. Drake?

The Witness: I would like to look at it.

[fol. 727] I think this correctly sets in my own mind the first time I was aware of discussions with Mathieson about a joint plant.

By Mr. Freed:

Q. In an effort to determine the next occasion on which Pennsalt-Olin discussions regarding a joint venture were held, I call your attention to Plaintiff's Exhibit 97, a memorandum from Mr. Land to Mr. Lawson, dated November 8, 1957. This exhibit states in part, "Mr. Grogan has felt very strongly about such a plant and has had preliminary discussions with people such as Olin Mathieson on the possibility of a joint venture."

To your knowledge does that document indicate to you that following late 1956, additional discussions were held between Pennsalt and Olin regarding a joint venture?

Mr. De Lone: I object to the form of that question. It's a double question. He says to your knowledge, and then, does the document indicate to you. If you want the witness to construe the document, that is one question.

The Court: I will sustain the objection and ask you to reframe your question, Mr. Freed.

By Mr. Freed:

Q. Mr. Drake, does Plaintiff's Exhibit 97 enable you to tell us whether any joint venture discussions were held [fol. 728] between Pennsalt and Olin in the year 1957.

Mr. De Lone: I object to the form of that question. I think we should find out whether the witness is construing the document or giving us his own knowledge.

Mr. Freed: To your own knowledge, Mr. Drake, were there any such discussions?

The Court: Independently of this Exhibit 97, were there any discussions between Pennsalt and Olin Mathieson concerning a joint venture in the latter part of 1957? By latter part I mean to include October, November and December.

The Witness: My best recollection is no, other than this that is recorded here.

The Court: You are referring now to Plaintiff's Exhibit 97?

The Witness: Yes, sir.

By Mr. Freed:

Q. Does Plaintiff's Exhibit 102, Mr. Drake, dated December 5, 1957, refresh your recollection with respect to discussions that had taken place in the latter part of 1957 between Pennsalt and Olin representatives regarding a sodium chlorate joint venture?

A. It refreshes my memory to the extent that Mr. Shanaman talked with Logan about the sale of chlorates, and in that discussion, as recorded here, the inferences here, [fol. 729] I should say, in the last sentence of PX-102, that there was some discussion or there might have been some discussion about a joint plan with Olin Mathieson. That's what I draw from that.

Q. And those discussions would have taken place some time prior to December 5, 1957, but in the year 1957?

A. Yes.

Q. In the year 1958 it is correct, is it not, that you and Mr. Land and Mr. Shanaman had a discussion with Mr. Logan, of Olin, in Philadelphia respecting a joint venture with Olin Mathieson, is that correct?

A. That is correct.

Q. And in the early part of 1959, as shown this morning

by the correspondence that Mr. De Lone handed you, correspondence between yourself and Mr. Logan, there were again discussions between Pennsalt and Olin with respect to a joint venture, is that correct?

A. I would just like to look at that correspondence just to make sure that I am answering the proper question.

Q. Plaintiff's Exhibit 160 and Plaintiff's Exhibit 154, I believe both mention the subject of joint venture discussions between Pennsalt and Olin?

A. These are in reference to potential plant sites, Brunswick, etc? Are those the ones you are referring to?

Q. Plaintiff's Exhibit 160 is a letter dated February 27, [fol. 730] 1959, and discusses a possible plant site at Brunswick, Georgia?

A. Yes, this does indicate that there were further discussions with Mathieson.

Q. In the year 1959?

A. In the year 1959, early '59.

Q. Is it a fact, then, Mr. Drake, that sodium chlorate for Pennsalt has been a project which up to a joint venture agreement of February 11, 1960, was rejected and revived on numerous occasions, both as a lone venture on the part of Pennsalt and as a joint venture on the part of Pennsalt and Olin?

A. No, that is not true. It was rejected on the part of Pennsalt as a lone venture. I don't think it had ever been rejected as a joint venture because no plan of a joint venture had ever been developed.

Q. Then to restate my summary of your testimony, sodium chlorate was a project which for Pennsalt alone was rejected and revived on a number of occasions between 1955 and 1960?

A. Between 1955 and the end of 1957, I believe it was, when we made the decision not to go ahead. I don't think it continued on past December of 1957, as I recall it.

Q. I believe, sir, that you testified just a few minutes ago that the——

[fol. 731] A. This is a single venture now.

Q. This is a single venture on the part of Pennsalt involving sodium chlorate without ammonium perchlorate.

The Court: Now you expanded your question. He understood your questions to be sodium chlorate alone, Pennsalt

alone. That is the way I have been understanding this examination.

By Mr. Freed:

Q. In order to clarify my examination from here on I wish you would assume that when I refer to sodium chlorate unless I specifically say otherwise I mean any kind of a project involving sodium chlorate by Pennsalt alone.

The Court: I think you ought to specify the products that you are talking about in each question; unless you do we are opening the door wide for confusion.

When you are talking about projects by Pennsalt alone I think you should state that in your question.

By Mr. Freed:

Q. Is it correct, Mr. Drake, that between 1955 and 1960 Pennsalt considered, rejected, revived, reviewed, and rejected again on a number of occasions a project all by itself in the East involving sodium chlorate with or without ammonium perchlorate?

Mr. De Lone: I object to the form of that question. [fol. 732] It seems to me it is very confusing.

The Court: It seems to me it is clear enough.

By the Court:

Q. Do you understand the question? If you do not it will be restated. If there is any ambiguity in this I am sure Mr. Freed will be glad to restate it because I think it is clear to Mr. Freed what he has in mind and it seems to be clear to me what he has in mind.

A. Perhaps the best way for me to——

The Court: Why don't you have the question read back, and if you have any trouble with any of these questions say so.

(The reporter read as follows:)

"Q. Is it correct, Mr. Drake, that between 1955 and 1960 Pennsalt considered, rejected, revived, reviewed, and rejected again on a number of occasions a project all by itself

in the East involving sodium chlorate with or without ammonium perchlorate?"

The Witness: Technically again I believe that I must answer that question that insofar as reviewing, revising, rejecting projects, the only ones that fall within the category that I have just expressed, which includes the rejection of a project, is a sodium chlorate plant alone. I do not recall that within the date period that you mentioned a [fol. 733] combined chlorate-perchlorate plant was rejected.

By the Court:

Q. Now, so the record is clear, you have been asked about a period 1955 to 1960. In the interest of accuracy should that period be narrowed either from an early date or a late date, or were they studies and considerations and rejections going on sporadically during this period 1955 to 1960?

A. The last rejection of the sodium chlorate plant was at the end of 1957, as I recall it.

By Mr. Freed:

Q. Picking up at that point the consideration which Pennsalt on its own gave to a project involving sodium chlorate from 1958 through 1959 and up to the joint venture agreement of 1960 was in connection exclusively with a combined sodium chlorate-ammonium perchlorate project?

The Court: Speaking about East of the Rockies?

By Mr. Freed:

Q. East of the Rockies.

A. I think that is a correct statement.

Q. In light of the documents which we just have reviewed bearing on the question of joint venture, the subject of joint venture was discussed, negotiated, reviewed between Pennsalt and Olin in 1956, 1957, 1958, 1959, and 1960. Is that correct?

[fol. 734] A. No, it is not correct.

Mr. De Lone: I object to the form of the question "In light of the documents we just reviewed."

Mr. Freed asked about some—I just don't see how the witness could know what Mr. Freed has in mind in that reference. It may be that in light of the answer—

The Court: You want to withdraw your objection?

Mr. De Lone: I withdraw it.

By Mr. Freed:

Q. Would you explain your answer, Mr. Drake?

A. Yes. I think when you included "negotiated" you are encompassing an area which really does not belong in there. Would you restate that question, please?

Q. Beginning at least in 1956, and continuing until the joint venture agreement or the letter of intent of February 11, 1960, Pennsalt and Olin considered throughout this period the subject matter of a joint venture?

The Court: I want to interject here. I do not want to keep interrupting the cross-examination because I know you should have freedom, but you are asking the witness what Olin considered, and if you are asking about negotiations that is one thing, if you are asking about internal considerations that is something else, if you are asking about Olin's internal considerations that is something else again.

[fol. 735] I do think in the interest of clarity and having the facts stated as they are there should be a breakdown of something akin to what I am suggesting.

By Mr. Freed:

Q. Confining my question, Mr. Drake, to consideration by Pennsalt and discussions with Olin—

The Court: You have got two things in this question, but go ahead and we will keep these two subjects in.

By Mr. Freed:

Q. In discussing with Olin the possibility of a joint venture which would include the product sodium chlorate, such consideration on the part of Pennsalt and discussion with Olin began at least as early as 1956 and continued on and off up through 1960. Is that correct?

A. I think that is a correct statement. Might I add something to that, incidentally?

Q. Please do.

A. As you made the statement it is correct. I think it should be recognized for the record that the discussions with Olin for this entire period were not necessarily between what I would call representative people of either company who were in a position to discuss for those companies a matter such as a joint venture.

You gather what I am driving at?

[fol. 736] Q. Are you saying, sir, that some of the discussions were unauthorized, or is your statement confined to the fact that some of the people who conducted the discussion did not have authority to commit their corporations to a joint venture agreement?

A. First I would comment on that this way: Some of those discussions, particularly the early discussions, and even some of the later ones I think, were not between people, certainly on the part of Pennsalt, who could commit Pennsalt to any such venture.

Nor do I think in some cases they were directed to have these discussions. I think that is important to bear in mind when you encompass a whole area of discussions running from, I believe you said 1956 through the ultimate agreement.

Q. If we confine the time period so as to begin with the discussions which Mr. Shanaman had with Mr. Logan in the latter part of 1957, and continue up through the Shanaman-Land-Logan and Drake meetings in 1958, and the Drake-Logan meetings in 1959, are we then considering a period of time in which the people who carried on the discussions were authorized representatives of the companies, at least as far as Pennsalt was concerned?

A. The first meeting Mr. Shanaman had at which I requested him to give me a report on his meeting was the [fol. 737] first one he was authorized to have with Olin Mathieson.

Q. And beginning with—

A. From then I believe your statement is correct.

Q. Authorized as far as Pennsalt was concerned?

A. I believe your statement is correct.

Q: And prior to that time the meetings could best be characterized as exploratory, at least so far as Pennsalt is concerned?

A. With somebody either in Olin or Pennsalt, probably in Pennsalt, having an idea, "Maybe this might be a good thing."

Q. Mr. Drake, this morning reference was made during the course of your direct examination to Penn-Olin as a subsidiary.

Can you tell us what you mean by the term "subsidiary"?

A. It is a corporate entity, part or whole of or all of which is owned by the parent, in this case Pennsalt if it is a Pennsalt subsidiary.

Q. As you use the term insofar as it relates to partial ownership can you tell us how much of an interest the parent corporation must have in order for the so-called "subsidiary" to be a subsidiary, in your view?

The Court: In what kind of a context do you pose the question, a question of this sort? Is it in an accounting context, in the sense of a legal definition of some sort, to [fol. 738] satisfy a statutory requirement?

It seems to me that question is so broad and so vague that it really is not an appropriate question.

After all, this witness has not testified as an expert in the field of accountancy or in the field of corporation law. He is a business executive and he has used the term "subsidiary,"—I do not remember where he used it but it was certainly in some kind of a context, and if you can relate the question to the context in which the word was used it seems to me you can get a more meaningful type of testimony, rather than if we deal in abstracts which simply dangle from nowhere.

Mr. Freed: I will try to do that, your Honor.

By Mr. Freed:

Q. Mr. Drake, insofar as the annual reports of Pennsalt are concerned, how much stock interest need Pennsalt have in another corporation in order for that corporation to be reflected on your books as a subsidiary?

A. I don't know.

Mr. De Lone: I withdraw my objection.

By Mr. Freed:

Q. Mr. Drake, does your company have a stock interest in the Solar Salt Company?

A. Yes, sir.

[fol. 739] Q. What is the extent of that stock interest?

Mr. De Lone: Objected to.

The Court: State your ground.

Mr. De Lone: It is irrelevant to this case and exceeding the scope of the direct examination.

The Court: I think the witness has testified that one of the advantages, either direct or implicit, in having a 50% ownership was that the debt put on the Penn-Olin wouldn't be reflected in the balance sheet. I think this question may be pertinent to that subject. I will overrule that objection.

It may have some other pertinence but at least it seems to be pertinent to that extent.

Mr. De Lone: All the facts with reference to Solar Salt have, I believe, already been covered by stipulation.

The Court: The objection is overruled.

The Witness: I believe we own 50% of a class stock. I can't recall whether it is Class A or Class B.

By the Court:

Q. Let me ask you a question to clarify my own mind. You spoke about the fact, as I understood your testimony, that if there was a 50-50 ownership between Pennsalt and Olin Mathieson, that any obligation of Penn-Olin wouldn't be shown on the balance sheet of Pennsalt?

A. That's correct.

[fol. 740] Q. And there wouldn't be any corporate responsibility so far as Pennsalt was concerned for payment of any obligation which Penn-Olin put on its property?

A. No legal responsibility.

Q. Now let's suppose you have a wholly owned subsidiary of Pennsalt. By hypothesis, let's assume that Penn-Olin was 100% owned. If Penn-Olin had borrowed money, there wouldn't be any corporate responsibility so far as Pennsalt was concerned, would there?

A. If Penn-Olin were wholly owned by Pennsalt?

Q. That's right.

A. Yes.

Q. There would be a corporate obligation?

A. There would.

Q. Why would that be?

A. We would be obliged then to show it on our balance sheet and consolidate it.

Q. It seems to me you are telling me two things. You are saying you would be obligated to consolidate the wholly owned subsidiary?

A. Yes.

Q. And as a part of the consolidated obligations, you would reflect the liability of Penn-Olin. That's what you are saying.

[fol. 741] A. Of the subsidiary, right.

Q. I understand that. But I am asking you, insofar as corporate responsibility is concerned there wouldn't be any theory, would there, on which Pennsalt would be liable for the obligation which a wholly owned subsidiary undertook to pay?

A. I am not an accountant but I think there is a liability there.

Q. I am not an accountant either, but I should doubt it. Anyway, if it is important I will have to resolve that as I see it.

The Court: I have interrupted you again, Mr. Freed.

Mr. Freed: I appreciate Your Honor's interruption, and I would request that any time you feel a question is left open that you do interrupt.

By Mr. Freed:

Q. Mr. Drake, in order to explore a bit further the meaning of a subsidiary as far as Pennsalt is concerned, I would like to read to you from a letter dated September 14, 1960, to Robert A. Bicks, Esquire, Assistant Attorney General, Department of Justice, signed by Robert V. Massey, Jr., counsel for Pennsalt. In item 11 of that letter, the following two sentences appear:

"Pennsalt's only joint venture in this country since [fol. 742] July 1, 1950, has been its participation with Hooker Chemical Corporation and certain individuals in the ownership of stock in Solar Salt Company at

Salt Lake City, Utah. The total investment in this company, which is engaged in harvesting salt from the waters of the Great Salt Lake and selling it, amounts to about one million dollars, of which Pennsalt's share is about 36%."

Directing your attention to the 36% interest, in your understanding of the accounting practices used by your corporation, is a corporation owned less than 50%, and specifically 36% in the case of Solar Salt, considered to be a subsidiary?

Mr. De Lone: I object to that question. I thought what was considered to be a subsidiary was a subject that your Honor indicated should not be inquired into.

The Court: I am going to sustain the objection and see if I can ask a question which covers what you have in mind.

By the Court:

Q. Under the corporate accountancy policy of your company, is it customary for you to consolidate in your balance sheet, the balance sheet of Pennsalt, companies in which Pennsalt has less than a 50% interest?

A. No, sir.

[fol. 743] The Court: Is that what you had in mind? Is this getting somewhere? It doesn't seem to me to be right just to ask a person in a blanket way what do they consider a subsidiary and what do they not consider a subsidiary, unless it is tied in with some use of the expression in context. The portion of the letter from Mr. Massey to Mr. Bicks didn't use the word "subsidiary," as I listened to you.

Mr. Freed: That is correct, your Honor. If I may direct an additional question to the witness I think it may bring this out.

By Mr. Freed:

Q. His Honor's question to you, Mr. Drake, concerned a company owned less than 50% by Pennsalt. Is your answer the same with respect to a company like Penn-Olin, which is owned exactly 50% by Pennsalt? Are such companies kept off the balance sheet of your company?

The Court: Consolidated or unconsolidated, that is really what it is, isn't it?

Mr. Freed: That's right.

The Witness: Usually when they are 50%—we haven't had too many—they are not consolidated.

By Mr. Freed:

Q. Do you know the purpose that Pennsalt has for not consolidating a 50% owned company?

[fol. 744] A. I think the purpose is best exemplified by one of the principal features of the Penn-Olin venture, which is that the leverage that we get in our investment and the return thereon is not impaired by the debt that the subsidiary company, the jointly owned company, has to make the project feasible. Do you understand what I am saying?

Q. I do, sir.

The Court: I am not sure that I do.

Mr. Freed: I might say, your Honor, that my understanding of Mr. Drake's testimony comes from spending several days on depositions with him.

The Court: What I am interested in here is getting a good, accurate record which reflects the facts. I don't want to be supplying too gratuitous information which is going to impair the effectiveness of your cross-examination, but it seems to me, from what I know or think I know in the area in which you are examining, that the question of whether or not a company is consolidated or not consolidated, certainly for purposes of certified statements, lies in the realm of accountancy. I don't know that a company would have a choice to say to certified public accountants. Don't consolidate this 50% subsidiary, or, consolidate it.

That is where I am having my difficulty. I may be wrong about that; there may be an election on the part of the [fol. 745] corporation itself. But I suspect there are some accountancy principles which might guide or really determine that choice.

The Witness: You are correct, sir.

The Court: If you know that I am correct, you can say that I am correct. I am not trying to supply an answer

in this area but I do pose that as a possibility to you, Mr. Freed, if it is important, or to the defendants if it is important, because I want to get the facts as they should be.

By Mr. Freed.

Q. Mr. Drake, do you know whether in the case of a company in which Pennsalt has a stock interest, the criterion of consolidation or non consolidation on the balance sheet is whether or not Pennsalt is responsible, legally responsive, for the debts of that company, at least the debts to the extent of the stock interest?

A. That is not the only criterion.

Q. Is that one criterion?

A. It could be a criterion. I would emphasize again that I am not an accountant.

The Court: It seems to me you are getting into legal questions as well. I will postulate a situation, Mr. Freed, where a parent company owns 1% of the stock of a company. It could guarantee the obligations of that company and be legally responsible for them.

[fol. 746] On the other hand, I can suppose a parent company can own 100% of the stock of a subsidiary company and not be responsible for the legal obligations of the subsidiary company.

Unless I am all wrong in my concepts of corporate responsibility, that must be the answer. The whole purpose of a corporate establishment is to insulate a shareholder from corporate liability. That is one of the basic advantages of it. It is the advantage which would flow to me if I set up a corporation and owned stock in it. I would not be responsible, assuming that the company issued fully paid, non assessable shares, I would not be responsible whether I owned one share or 100% of the stock.

Certainly, as a matter of law, I should think that would be true so far as the corporate stockholder is concerned.

I am interjecting this because I do think that you are in the realm now of a legal area.

Mr. Freed: Your Honor, I was attempting by my questions to determine whether this witness had any facts upon which he based his description or designation of Penn-Olin as a "subsidiary." The purpose in this line of ques-

tioning was to inquire into the facts relating to a legal defense interposed by the defendants under which, on one hand, it is asserted that Penn-Olin is not a subsidiary for purposes of guaranteeing its debts, and is kept off the balance sheet for that reason.

[fol. 747] On the other hand, Penn-Olin is supposedly a subsidiary for the purposes of Section 7 of the Clayton Act. It was an effort to determine whether there was any common ground for defining a subsidiary that I asked this particular witness' opinion.

The Court: I think that again you are asking his opinion is it a subsidiary for the purposes of having it in the balance sheet of the owned corporation? Is it consolidated for purposes of Section 7 of the Clayton Act?

It seems to me those questions are essentially legal in character, and I don't think, in the absence of some background qualification, which hasn't been developed through Mr. Drake, that it is properly propounded to him. Mr. Drake might say, "I think it is a subsidiary for purposes of Section 7," or, "It is not a subsidiary for purposes of Section 7," but I don't see what that would have to do with my judgment.

In view of what I have said, do you want to pursue this further, Mr. Freed?

Mr. Freed: No. In view of your Honor's remarks on the subject, I would not pursue this particular line of questioning and we will treat the question of subsidiary as a strictly legal question.

The Court: I think it may be a factual question too, but the facts have been developed, haven't they, that is, that [fol. 748] this is a 50% owned corporation, Penn-Olin is a 50% corporation. Now, if there are other facts which you feel should go in the record which are pertinent to whether this whole transaction which is within or without the compass of Section 7, you develop those facts. I am not placing any limitation on the area of your development of the facts.

Mr. Freed: Thank you, your Honor.

The Court: We will take a ten-minute recess.

(At this point a brief recess was taken.)

[fol. 749] By Mr. Freed:

Q. Mr. Drake, I would like next to direct your attention to Plaintiff's Exhibit 146, which you discussed with Mr. DeLone this morning. This is the document which records the happenings at the meeting of November 3, 1958.

I believe it was your testimony that the whole investment by Pennsalt in this projected independent sodium chlorate-ammonium perchlorate project in the east depended on Pennsalt's ability to sell 10,000 tons of ammonium perchlorate.

Does that correctly summarize your testimony with respect to that document this morning, at least on this particular subject?

A. I don't think you can state it exactly that way. Obviously there was some dependency upon the sale of the chlorate itself; but the difference between whether it was an attractive project or just another chlorate project depended upon our ability to sell the 10,000 tons of perchlorate because that was the part of the venture that had the greatest profit margin in it.

Q. I believe you also testified that following the meeting of November 3, 1958, the information contained in Defendants' Exhibit 1, a memorandum dated November 11, 1958, caused Pennsalt's interest in ammonium perchlorate [fol. 750] to wane. Is that correct?

A. You are referring particularly to paragraph 3 of that exhibit D-1 in which I refer to the double accounting?

Q. I believe that was your reference this morning.

A. That is correct.

Mr. DeLone: So the record will be clear, I believe that is paragraph number 2 that has the double accounting reference.

The Witness: It is three to me; but it is numbered 2, but it is paragraph 3.

Mr. DeLone: Thank you.

By Mr. Freed:

Q. Did you say that a final decision with respect to this particular project was reached as a result of Defendants' Exhibit 1, or simply that this resulted in a decline of your interest in the project but the project continued?

A. I believe I said it was a waning interest.

Q. The interest had not terminated with the delivery of this exhibit?

A. If I testified to that I don't think I testified correctly. I don't think I said this was the final decision.

Q. Turning your attention to Plaintiff's Exhibit 148, the minutes of the Management Committee Meeting Num-
[fol. 751] ber 90, held November 13, two days after Defendants' Exhibit 1, does that document indicate to you that the southern chlorate-perchlorate plant was still alive?

A. It had a little breath left in it, but very little.

Q. Do you recall the memorandum dated December 31, 1958, from Marshall Ramstad to Mr. G. E. More, which has been marked Plaintiff's Exhibit 150?

A. I am not sure that I have that. Was that introduced this morning?

The Court: I think it has not been placed on your desk. It was not placed on mine.

By Mr. Freed:

Q. While we are getting the document can you tell us who Marshall Ramstad is?

A. I think he is a market research man for the Pennsalt of Washington, or what used to be Pennsalt of Washington, the Western Division, Northwest Division.

Q. Mr. G. E. More?

A. He now is the general manager of the Industrial Chemicals Division, West.

Q. And directing your attention to the last paragraph of Mr. Ramstad's memorandum to Mr. More, which states:

> "The news article is very optimistic or the MD-7-58 report is very conservative. However, it does indi-
> [fol. 752] cate that Pennsalt figures being used are on the right side of the fence for this type of program."

As you read Mr. Ramstad's remarks in Plaintiff's Exhibit 150, is he referring to Pennsalt's estimates with respect to the ammonium perchlorate picture?

A. I am sorry, but I don't know just what he is referring to.

Q. Perhaps if you would take a moment to read the document you could tell us.

A. I still don't know what "MD-7-58" project report is. I know it refers to ammonium perchlorate, a status report, but I do not know who made the report, or whether it is a report within our organization or outside of our organization. That is what I meant by I didn't know what or to what he was referring.

Q. Can you tell us from this document anything about the prospects of ammonium perchlorate as they appeared to Pennsalt on the date of this exhibit?

Mr. DeLone: I object to the form of that question. Now I want to be clear whether the question is asking the witness to construe the document, or whether it is asking for his knowledge?

The Court: I will sustain the objection to the question on the ground stated.

[fol. 753] By Mr. Freed:

Q. From your examination of this document, Mr. Drake, can you tell us the prospects for ammonium perchlorate as they appeared to have been known to Pennsalt according to Plaintiff's Exhibit 150?

A. You will change that——

The Court: Just a moment. Are you objecting?

Mr. De Lone: The same objection.

The Court: Are you not asking the witness to state whether the document reveals prospects of ammonium perchlorate as they then appeared to be to Pennsalt? Isn't that what your question comes down to?

Mr. Freed: Yes, it does.

The Court: If so isn't it simply asking the witness to construe the document?

Mr. Freed: That is my request to the witness.

The Court: Doesn't the document speak for itself?

Mr. Freed: I believe it does, and I will not labor the point further.

By Mr. Freed:

Q. Directing your attention to Defendant's Exhibit 11, the minutes of an Appropriations Committee Meeting Number 12 of December 23, 1958, is it not a fact that, Mr.

Drake, this capital appropriation request discussed in [fol. 754] Defendants' Exhibit 11 was submitted pursuant to the decision reached at the meeting of November 3, 1958, covered by Plaintiff's Exhibit 146?

A. Would you repeat the decision for me so I will have it clear in my mind?

The Court: Do you want to read the question back?

Mr. Freed: I can proceed further, Your Honor.

By Mr. Freed:

Q. I direct your attention, Mr. Drake, to Plaintiff's Exhibit 146, page 3, paragraph number——

The Court: Just a moment.

By the Court:

Q. Do you have that exhibit in front of you?

A. I am trying to sort it out.

Q. It is 146. It is a memorandum dated November 11, 1958.

A. I do not have it. I have about everyone else.

Q. You may use mine, if you like. Do you have DX-11? He is going to ask you about DX-11.

By Mr. Freed:

Q. It is paragraph number 1 at the middle of the page, beginning, "The Western Division will immediately initiate preparation of an appropriation request."

Do you have that reference, sir?

[fol. 755] A. I am sorry, but I don't. Somebody just handed me—This is Plaintiff's Drake Exhibit Number 32.

Q. It is the same thing.

A. What are you referring to?

The Court: Mr. Freed, is the record clear that Drake Exhibit 32 is the same as Plaintiff's Exhibit 146?

Mr. Freed: That is correct.

The Witness: This follows, in answer to your question, this appropriation summary, DX-11, follows Plaintiff Drake Exhibit Number 32.

By Mr. Freed:

Q. Which is Plaintiff's Exhibit 146?

A. Plaintiff's Exhibit 146, in which on page 3 it is stated:

> "The Western Division will immediately initiate preparation of an appropriation request for a 2,000 ton per year capacity ammonium perchlorate plant at Portland, Oregon."

That is correct.

Q. In other words, the appropriation request, Defendants' Exhibit 11, was submitted pursuant to the action of the meeting recorded in Plaintiff's Exhibit 146?

A. That is correct.

Q. Going back for a moment, Mr. Drake, to Defend-
[fol. 756] ants' Exhibit 1, which is the one-page memorandum from Mr. Eastman to Mr. Sloane, dated November 11, 1958, I call your attention to the last paragraph of that document in which the suggestion is made that the Technical Division might want to prepare an alternate case scaling perchlorate cost estimates from the 10,000 TPY.

I ask you whether Plaintiff's Exhibit 153, dated January 20, 1959, is in fact the cost estimate document which meets the description and recommendation contained in the last paragraph of Defendants' Exhibit 1?

A. I rather doubt it, from what I can read of it.

[fol. 757] Q. Mr. Drake, perhaps I can assist you by calling your attention to the fact that Plaintiff's Exhibit 146 discussed a combined chlorate-perchlorate plant at Calvert City which would involve 30,000 tons per year of sodium chlorate and 10,000 tons per year of ammonium perchlorate, as indicated in paragraph A-1 on the first page, is that correct?

A. Right.

Q. Next, Defendants' Exhibit 1 transmitted additional information with the recommendation that the tonnage of ammonium perchlorate be reduced from 10,000 tons per year to 5,000 tons per year, correct?

A. Right.

The Court: Excuse me. Doesn't it also do more than that? It speaks about 20,000 tons of sodium chlorate as contrasted with 30,000 tons which is referred to in PX 146.

Mr. Freed: That is correct, your Honor.

The Court: In other words, there is a stepdown in tonnage of both the sodium chlorate and ammonium perchlorate from D-1 to P-146.

By Mr. Freed:

Q. Is the Court's reading of Defendants' Exhibit 1 correct as you interpret it?

A. Yes.

Q. I ask you then whether Plaintiff's Exhibit 153, which [fol. 758] contains a number of tables for sodium chlorate and ammonium perchlorate, in fact carries out the recommendations of PX 146 and DX 1 in so far as it contains in Table 1 a sodium chlorate plant to produce 25,000 tons per year, and in Table 2 to produce ammonium perchlorate of 5,000 tons per year out of the 25,000 tons of sodium chlorate referred to in Table 1?

A. I am clear now, and I think it does.

The Court: Well now, I want to interject here.

By the Court:

Q. There is a variance, is there not, between the tonnage referred to in D-1, referring to the tonnage of sodium chlorate, which is 20,000 tons, and the tonnage of sodium chlorate referred to in PX 153, which appears to be 25,000 tons of sodium chlorate, is that right?

A. I noticed that the first time I looked at it; then I looked back and I thought I had corrected it in my own mind.

Now let's see. D-1 in paragraph 3 talks about producing for sale, as I understand it, 20,000 tons per year of sodium chlorate, producing for conversion to perchlorate another 5,000 tons of sodium chlorate. That was my interpretation. So that you then have a 25,000 ton per year sodium chlorate plant, of which 5,000 tons is converted into ammonium perchlorate.

[fol. 759] By Mr. Freed:

Q. With that explanation, the two documents, D-1 and Plaintiff's 153, would be consistent with one another, and Plaintiff's Exhibit 153 would in fact carry out the recom-

mendations of Plaintiff's Exhibit 146 as modified by Defendant's Exhibit 1, is that correct?

To rephrase my question in terms of the production amounts involved, on November 3, 1958 the decision was to prepare estimates respecting a 30,000-ton sodium chlorate plant, 10,000 tons of which would be converted to ammonium perchlorate, correct?

A. Right.

The Court: Which exhibit is that?

Mr. Freed: Plaintiff's 146.

Q. On November 11 the recommendation was made that the plant be scaled down to 25,000 tons per year of sodium chlorate, split 20,000 tons of sodium chlorate for sale, 5,000 tons for conversion to ammonium perchloarte, is that correct?

A. I believe so.

Q. And the estimates contained in Plaintiff's Exhibit 153 are those estimates, namely, a 25,000 ton per year sodium chlorate plant, 5,000 tons of which would be converted to ammonium perchlorate, is that correct?

A. I believe so.

[fol. 760] The Court: Well now, I am going to ask the witness a question because I want the record straight at this point.

By the Court:

Q. Get Defendants' Exhibit 1 before you. I am going to talk about two documents: DX-1 and PX-153.

A. Right.

Q. Directing your attention to D-1, paragraph numbered 3 on page 1, you construe that as referring to a 25,000-ton sodium chlorate plant?

A. Yes, sir.

Q. Of which 5,000 would be used for ammonium perchlorate?

A. Right.

Q. Now turn your attention to page 1 of PX 153, the first paragraph. Why would you not construe that paragraph as requiring the manufacture of 30,000 tons of sodium chlorate, of which 5,000 tons would be used for am-

monium perchlorate? It seems to me the interpretation which you place on D-1 would make consistent the interpretation which I have suggested of P-153.

A. Your Honor, I probably erred in reconciling the two with Table 1 rather than the first paragraph of the document, PX 153, simply because I can't read the first paragraph.

Mr. Freed: Mr. Drake——

[fol. 761] The Court: Just let the witness answer my question. He said he couldn't read on the copy of the exhibit before him what I was reading on the copy before me.

The Witness: Sir, the difference, I believe, is that this document here, D-1, speaks of producing for sale 20,000 tons per year, whereas this merely speaks of producing 25,000 tons per year.

The Court: Very well; that answers my question.

When you say "this" you are referring to P-153?

The Witness: Yes.

Mr. Freed: Before I proceed to a new subject, your Honor, do I correctly understand from the colloquy that has taken place that the three documents are reconciled in the Court's view by the testimony which Mr. Drake has given?

The Court: I was really speaking about consistency of interpretation by Mr. Drake of D-1 and P-146, and I understand the testimony of Mr. Drake, and his testimony seems to me reasonable enough as he has explained it. It didn't seem to me to be reasonable without the explanation when I looked at the two documents.

By Mr. Freed:

Q. Mr. Drake, I would like next to have you turn your attention to Plaintiff's Exhibit 111, which is the memorandum to the file from J. O. Logan, dated February 4, [fol. 762] 1958. Am I correct that this is the document to which you testified this morning that the substance of paragraph 3, regarding the agreement between Olin and Pennsalt, that that paragraph does accurately reflect the essence of your recollection of the meeting in Philadelphia between you, Mr. Shanaman, Mr. Land and Mr. Logan?

A. I believe I testified that to the best of my recollection the document in itself—I don't think I pointed out paragraph 3 necessarily—reflected as best I could recall it the gist of the meeting that we had with Logan.

Q. Then the entire document accurately reflected——

A. I said yes, except that I would not express it exactly the way he had expressed it, were I to write it.

Q. Mr. Drake, can you tell us as a matter of fact whether Pennsalt at any time subsequent to the meeting held in Philadelphia on February 3, 1958 took any definitive action or move in the chlorate or perchlorate field without consultation with Olin?

A. Internally or externally?

Q. Either.

A. Internally, certainly.

Q. Can you tell us the occasion or occasions on which Pennsalt took definitive action, or made moves in the area of chlorate or perchlorate without consultation with Olin? [fol. 763] A. I hate to quibble on this but I'm afraid I'll have to ask what you mean by definitive action.

Q. Can you recall any decisions made at any level of the company, following February 3, 1958, in which Pennsalt made any kind of a decision with respect to chlorates or perchlorates?

A. Yes. I think it was after this—I think it was after this—let me check. As I have testified earlier, throughout '58 we were looking at the possibility of a joint—when I say joint I should say combined—chlorate-perchlorate plant in the southeast. I think I am correct on the date.

While I am looking, obviously one definitive action that we took was to expand the plant in the northwest, which was early in '59, as I recall it, yes. Now, how definitive you can make the action, I don't know how you want to express it but obviously we were reviewing actively the combined ammonium perchlorate-chlorate plant for the southeast throughout 1958, which culminated in the waning of our interest at the end of '58, early '59, to which we referred earlier. Now, how definitive that action is I don't know, but that is the best answer I can give you.

Q. Am I correct, Mr. Drake, that as indicated in Plaintiff's Exhibit 146, there was a meeting on November 3, [fol. 764] 1958 at which the people present determined that there appeared to be an attractive return on a combined

venture by Pennsalt in sodium chlorate and ammonium perchlorate as a result of what then appeared to be a very high return on perchlorate?

A. That is what the document says.

Q. Is it correct that that is what the people at that particular meeting, as indicated by this summary of the meeting, believed?

A. I think the testimony that I have given has indicated that there was not complete agreement with this document, the contents of this document. I believe I have already testified to that effect.

Q. I don't recall your testimony, Mr. Drake, and I wonder if you could repeat the respects in which as of the date of this meeting the summary of the meeting appears to have been incorrect?

A. Well, for one example, I would refer you to the item number 5 on said document, PX 146, the characterization of the project as a gamble. I would then refer you down to Item 8, in which it refers to inconsistencies.

Q. Before you go further, sir, is it your testimony that the people at the meeting did not consider a chlorate-perchlorate venture as a gamble?

A. No, that isn't what I said.

[fol. 765] Q. Then Item 5, on page 1, does correctly express the sentiment of the meeting as of that date?

A. It is the sentiment of the writer of the document as to his interpretation of the sentiment of the meeting.

Q. Was his interpretation with respect to the gamble nature of the decision wrong?

A. No.

Q. Now with respect to Item 8, the major inconsistency referred to, is that inconsistency correctly set forth on page 4 of Plaintiff's Exhibit 146?

A. As best I can recall, I think this outlines the inconsistencies, yes.

Q. Can you tell us whether there is any respect, as you examine Plaintiff's Exhibit 146, in which the document fails accurately to record what transpired at the meeting?

The Court: Mr. Freed, again I think that when you examine a witness on a four-page document, single-spaced, you really ought, to the extent that there are significant statements in there, to ask the witness about whether what you consider to be the significant statements are accurate,

rather than ask a blanket question. It's pretty hard for a person on the witness stand to take a document—obviously he supposes generally it is accurate—a four-page, single-spaced document, and answer it out of hand without going [fol. 766] over it very carefully presents some difficulty.

You have something in here that probably you think of particular importance, or several perhaps. Ask Mr. Drake about them.

Mr. Freed: I will abide by Your Honor's observation. I might say that the only reason I asked the question in the general way I did is that this document was covered extensively during deposition of Mr. Drake, and my purpose before going to particular points——

The Court: What did he testify, that it accurately reflected what happened?

Mr. Freed: My recollection is that it did.

The Court: Is that what you want to establish? If so, I would leave it; but if you want to break down some of these things then it seems to me you ought to go to paragraphs why you or which you think are inaccurate.

By Mr. Freed:

Q. Mr. Drake, on page 2, paragraph numbered 4, the statement is made, "As the newest producer, Pennsalt should and could take leadership in (1) promoting sales aggressively; (2) extending existing uses; (3) developing new uses; (4) improving use technology. Technical service and application research personnel and facilities will be needed. Assembly of these assets should start immediately by the Industrial Division."

[fol. 767] Can you tell us whether that particular paragraph did represent the consensus of the meeting as of the date of the meeting?

A. The best answer I can give you to that specific question is—it may not be satisfactory but the best answer I can give you is that I must have been asleep if any such conclusion was reached in my presence.

Q. Mr. Drake, with reference to paragraph numbered 7, on page 2, can you recall the sentiment of the meeting being that, "A second follow-up announcement on this proposed Calvert City plant should be issued promptly to pre-empt the market from other interested companies, Solvay, Columbia Southern, Olin Mathieson, etc. Wording of the pub-

licity should be carefully chosen to avoid upsetting current pricing, particularly in perchlorates."

A. I do not recall any such conclusion.

[fol. 768] Q. Does your recollection enable you to state that no such conclusion was reached by the people at the meeting?

A. I cannot say that.

By the Court:

Q. You received a copy of this Plaintiff's 146 at or about the time?

A. Yes.

Q. You did not suggest to the writer or any of the distributees that a correction should be made, I take it.

A. No, I did not.

Q. Did you review it after you received it?

A. I am not at all sure, frankly.

Q. Would you in the normal course of events?

A. A document of four pages, normally I try not to work on. I might well have reviewed this. I will not say that I didn't.

Q. You have no independent recollection you did or did not?

A. I have no independent recollection. I would add only that as has been borne out, very few of these things were done.

By Mr. Freed:

Q. Turning your attention next to the near the bottom of the page, paragraph number 2, do I correctly recall your [fol. 769] testimony in response to Mr. DeLone's questions this morning that in fact in a general way, Mr. Drake, you did apprise the board on November 3, 1958, of the proposed plans for production and marketing of sodium chlorate and ammonium perchlorate in the East?

A. I believe I testified that I told the board that we were giving some thought to a plant, and, as has been my custom on any such thinking, I wanted to apprise the board of management's thinking as to this possibility. That is correct.

Q. Is it correct, Mr. Drake, that at the time of the meeting recorded in Plaintiff's Exhibit 146, and on the same date on which there also was a board meeting that Pennsalt's thinking and Pennsalt's planning was in the direction of

an independent venture to produce sodium chlorate and ammonium perchlorate in the East without Olin Mathieson?

A. Yes, I think that is a fair statement. We were still hoping that we could put it together ourselves, yes.

Q. Is it a fact, Mr. Drake, in January of 1959, during a chance meeting between you and Mr. Logan you again discussed with Mr. Logan the possibility of a joint venture between Pennsalt and Olin, this time in sodium chlorate-ammonium perchlorate?

A. PX-154 refers to my having talked with Olin Mathie- [fol. 770] son and reporting the same to the Appropriations Committee on January 23. That refers to a joint venture at Brunswick. Whether that specifically refers to a chlorate joint venture or a sodium chlorate-ammonium perchlorate joint venture I cannot swear to.

On the second page of the same document the issue was further confused by virtue of the fact that it states that Dr. LaLande has agreed to prepare data for discussion with Olin Mathieson re the economics of a joint venture in the East for a chlorate-perchlorate project.

I think this is the key. If Olin is not desirous of proceeding further with this joint venture Dr. LaLande agreed to submit to the committee data on Pennsalt doing a project alone.

Now, I refer to that because I do not recall whether the actual discussion with Logan was on chlorate alone or chlorate-perchlorate; it could well have been on chlorate alone. And as a result of our discussion in the Management Committee or the Appropriations Committee No. 15, bearing in mind that we had gotten these figures together on sodium chlorate and ammonium perchlorate, that the idea was to propose such a sodium chlorate-ammonium perchlorate to Mathieson when we next talked with them.

That is taking a long time to answer your question, but [fol. 771] I think for clarity, I hope it is for clarity, that is the best way I can answer it.

Q. Is it correct, then, sir, that following the meeting of November 3, 1958, at which an independent Pennsalt sodium chlorate-ammonium perchlorate project was planned you had a discussion with Mr. Logan at which sodium chlorate, perhaps ammonium perchlorate, was discussed, and after that meeting the appropriations committee of Pennsalt de-

termined to discuss with Olin doing the chlorate-perchlorate project in the East as a joint venture?

Mr. De Lone: I object to that as a triple question.

The Court: Read the question back.

(The last question was read by the reporter.)

The Court: If the testimony shows what was said or done at these meetings why don't you simply refer to the last meeting in which you are interested and not make your question argumentative. Say "in such and such a meeting did you do so," and the record will show what has been done, and if the record does not show it then your answer may lose its significance. But if you want to establish these facts, and they are not established, I think you ought to establish them one time. If they are established I do not see any need to make your question argumentative.

Mr. Freed: Thank you, your Honor.

[fol. 772] By Mr. Freed:

Q. Mr. Drake, is it a fact following your meeting with Mr. Logan the Appropriations Committee of Pennsalt determined to submit a proposed chlorate-perchlorate project for joint consideration by Pennsalt and Olin?

A. The way you state that I cannot say that it is a fact. Following the meeting with Mr. Logan, and which was reported by me to the Appropriations Committee, the only decision that was made at that time was to ask Dr. LaLande to prepare data for a possible discussion with Olin Mathieson.

By the Court:

Q. On the subject of chlorate——

A. On the subject of a joint venture for the sodium chlorate-ammonium perchlorate project.

Q. In the East?

A. In the East.

By Mr. Freed:

Q. Is it not a fact, Mr. Drake, that following this Appropriations Committee meeting you and Mr. Logan had an exchange of correspondence, as indicated by Plaintiff's

Exhibits 160 and 163, and possibly other conversations in which the prospect of a joint venture involving sodium chlorate was further discussed?

A. If those were mentioned in the correspondence to [fol. 773] which you refer I do not happen to locate them right at the moment, but if those are specifically mentioned I would say the answer is "Yes."

Q. Would you, Mr. Drake, examine the——

A. 160?

[fol. 774] Q. —document Plaintiff's Exhibit 160, which is the letter from John Logan to you dated February 27, 1959, which in the last paragraph discusses sound economics for chlorate production; and also Plaintiff's Exhibit 163, another letter from Mr. Logan to you regarding locations.

A. Neither of which refer to perchlorate.

Q. The only reference I see, sir, in either letter is in Plaintiff's Exhibit 160 to chlorate.

Mr. De Lone: I will agree the document says whatever it says. I object to questions about this back and forth about what is in the documents. If they are there, they are there.

The Court: Your general objection is overruled.

It is now 4:30, and I think we will recess until tomorrow morning, unless you would like to finish an area of examination before we recess for the evening, Mr. Freed.

Would you like to finish a certain area before we recess?

Mr. Freed: I would like to finish, Your Honor, and if possible to complete Mr. Drake's examination today. I believe it will put us all in a better position to conclude the case tomorrow.

The Court: I may have to take a few minutes off but let's—Well, let's continue now. How much redirect exam-[fol. 775] ination are you going to have?

Mr. De Lone: So far one question.

The Court: All right.

By Mr. Freed:

Q. Can you recall, Mr. Drake, from your examination of the correspondence whether the joint venture discussions between you and Mr. Logan covered anything more than sodium chlorate?

A. No, I cannot, and that is why I answered the previous question the way I did. I depend more on this than I do on my own memory.

By the Court:

Q. You are tapping the document?
A. The documents.

Mr. De Lone: Which documents?
The Witness: PX-160 and 163.

By Mr. Freed:

Q. I would next like to show you the minutes of the Management Committee Meeting Number 99, dated April 9, 1959, marked Plaintiff's Exhibit 164.

The minutes, Mr. Drake, refer to Roman numeral VI, "Southern Chlorate-Perchlorate Plant," and reads:

> "Mr. Drake advised that the joint venture potential location of Brunswick was now out of consideration [fol. 776] but that McIntosh, Alabama, was a possibility on which Mathieson will report further to him shortly."

Can you tell us whether this minute of your Management meeting refreshes your recollection or enables you to state whether your discussion with Mr. Logan concerned sodium chlorate or sodium chlorate-ammonium perchlorate?

A. With the possibility that the person recording this misused a title, and I think that is very unlikely, and in being consistent with my statement about the documents 160 and 163, if this is recorded here accurately then I must have talked with Mathieson about a joint sodium chlorate-perchlorate plant.

Q. Returning to Plaintiff's Exhibit 154, the minutes of the Appropriations Committee meeting on January 23, 1959, the minutes being dated January 29, is it not a fact that the Appropriations Committee determined that a joint venture in chlorate-perchlorate would be pursued with Olin, and if Olin was not interested the economics of the plant would then be considered for Pennsalt doing the project by itself?

Mr. De Lone: I object to that as repetitive, at least the first part, because the witness already said what they determined, in cross examination.

The Court: I overrule the objection. Your question is [fol. 777] directed to the last paragraph of Plaintiff's Exhibit 154?

Mr. Freed: The last paragraph, Your Honor, and the last sentence of that paragraph.

The Witness: I will be glad to give you the same answer I gave before. The decision that was reached at this time was to ask Doctor LaLande to prepare data for discussion with Olin Mathieson re the economics of a joint venture in the east for a chlorate-perchlorate project. That was the decision reached at that time.

By Mr. Freed:

Q. Is it correct that the committee decided to pursue the possibility of a joint venture with Olin and in the event that that did not materialize then it would reconsider a lone venture?

A. I do not think you can read that into that.

By the Court:

Q. What is the fact? You are being asked now what the committee decided.

A. I do not think the committee made that decision. The committee decided to ask LaLande to prepare data.

By Mr. Freed:

Q. Can you tell us whether as a result of your meeting Pennsalt in fact pursued a joint venture in chlorate-[fol. 778] perchlorate instead of a lone venture?

A. I believe I answered that in answer to your question regarding PX-164, that if the heading "Southern Chlorate-Perchlorate Plant" is accurately included in that document then I must have talked with Olin Mathieson about a joint chlorate-perchlorate plant.

Q. Assuming that the document is correct, and do you have any information that would indicate Plaintiffs Exhibit 164 is not correct?

A. I have no specific information that it is not correct, no.

Q. Then assuming that the facts stated in these documents are true, is it a fact that Pennsalt's decision to plan for an independent venture in sodium chlorate and ammonium perchlorate taken in November, 1958, was converted into a joint venture project with Olin following your discussion with Mr. Logan in January, 1959?

A. I think that is stated too strongly. You say converted into a project with Penn-Olin on a joint chlorate-perchlorate. I think that is stronger than the facts, as I recall them, dictate.

The discussion with Penn-Olin may have taken place, it did take place according to this, assuming that the recording is correct, but the fact that, as you stated it, I think [fol. 779] again is too strong to represent the conditions existing at the time.

Q. Is it too strong because in fact no such project materialized, or is there another respect in which my statement was too strong?

A. My recollection is that not too much concern was given to a joint, or, I should say, a combination of sodium chlorate and ammonium perchlorate with Olin Mathieson. They may have come into the discussions, but the principal discussion with Olin Mathieson has been on sodium chlorate.

The Court: I am going to have to take a five-minute recess. About how much more do you have, if I can inquire?

Mr. Freed: I see only another five minutes or so.

The Court: We will be back, then.

Mr. De Lone: Before you leave the bench, the witness used the word — twice in the last answer "Penn-Olin." I think it was a slip of the tongue. I think the witness meant Olin, and he said, "Penn-Olin."

By the Court:

Q. Is that the fact?

A. Olin Mathieson is what I meant to say or refer to.

Mr. De Lone: Thank you.

(At this point a short recess was taken.)

[fol. 780] By Mr. Freed:

Q. Mr. Drake, is it true that in the latter part of 1958 and the early part of 1959, consideration by Pennsalt of an independent sodium chlorate-ammonium perchlorate project became converted following your discussion with Mr. Logan into consideration by Pennsalt with Olin of a joint venture involving sodium chlorate?

A. No.

Mr. De Lone: Objected to as having been previously fully covered.

The Court: Overruled. The question has been answered.

By Mr. Freed:

Q. Mr. Drake, can you tell us in what respects the statement embodied in my question is wrong?

A. For the same reason that I objected to it before. Objected perhaps is not the proper word. The word "converted."

The Court: In the previous question the word "project" was used. This was a bit vague.

The Witness: The consideration on the part of Pennsalt going it alone on the sodium chlorate-ammonium perchlorate venture in the East waned, as I have testified in the past. At some point some consideration was given to a joint venture, as evidenced by the documents here, one document [fol. 781] being PX-164. Apparently some consideration was given to this sodium chlorate-ammonium perchlorate project or venture with Olin Mathieson.

What your question implies to me is that we had a project, that we were all set to go on, and then we all of a sudden stopped on that and started out with Olin Mathieson, and if that is what you are driving at, that isn't what happened.

Q. My question, Mr. Drake, was intended to confine itself to consideration by Pennsalt of an independent sodium chlorate-ammonium perchlorate project, not a decision, a final decision, to go ahead. My question is confined to Pennsalt's consideration of an independent sodium chlorate-ammonium perchlorate project, and the question is whether that consideration was converted into consideration of a joint venture with Olin?

A. Or did we possibly consider also the possibility of going ahead on the same type of project with Penn-Olin? Is that what you are saying?

Q. First of all, you used the term Penn-Olin.

A. I beg your pardon; Olin Mathieson.

Q. I'm afraid I do not understand your response.

The Court: Read the question back.

(The question was read by the reporter.)

[fol. 782] The Witness: I stumbled on this word "converted to", because I don't think it is accurate.

By Mr. Freed:

Q. Perhaps we can take this up one step at a time, Mr. Drake. In November 1958 Pennsalt decided at a meeting to consider and plan for an independent sodium chlorate-ammonium perchlorate project in the East, is that correct?

A. I would rather have you state that——

The Court: You don't ask the questions. You answer the questions, and you answer this as accurately as you can. Do you want the question read back?

(The question was repeated by the reporter.)

The Witness: The way you state it, no. Pennsalt decided to explore further the possibility of an independent sodium chlorate-ammonium perchlorate plant in the East.

Q. And in January 1959 you met with Mr. Logan and discussed with him the possibility of a joint venture involving sodium chlorate, is that correct?

A. Assuming that his heading on this memorandum is correct, I discussed with Olin Mathieson not just sodium chlorate but apparently also ammonium perchlorate.

Mr. De Lone: The witness indicated a memorandum. May we know which one he is referring to?

The Witness: The document is PX-164.

[fol. 783] By Mr. Freed:

Q. And following your meeting with Mr. Logan, Pennsalt determined that it would prepare data for discussion with Olin regarding the economics of a joint venture in the East of a chlorate and perchlorate plant, is that correct?

A. That is correct.

Q. And the Appropriations Committee Meeting No. 15, whose minutes are recorded in Plaintiff's Exhibit 154, decided that if Olin was not interested in proceeding with the joint venture in chlorate-perchlorate, then Dr. LaLande would return to the committee with data on Pennsalt doing that project alone, is that correct?

A. That is correct if you recognize this. This assumes that we decide to present the data to Olin Mathieson. But I don't believe the data ever was presented to Olin Mathieson.

Q. Is it correct that following this meeting you and Mr. Logan did discuss a joint venture which involved the product sodium chlorate?

Mr. De Lone: You say following this meeting. I object to that unless we know what meeting.

The Court: I think it is clear he is referring to the Appropriations Committee Meeting of January 23, 1959, in the report of January 29, 1959. Is that right, Mr. Freed?

Mr. Freed: Yes.

[fol. 784] The Court: That is Plaintiff's Exhibit 154. Is that the meeting you are referring to, Mr. Freed?

Mr. Freed: Yes, it is, your Honor.

The Witness: I hate to repeat myself but the only document that we have that would tend to clarify that is the document PX-164—I believe this is the only document—and I question the heading on it. If the heading is correct, then I did discuss sodium chlorate and ammonium perchlorate with Mathieson.

By Mr. Freed:

Q. And is it not a fact, Mr. Drake, that even if the heading is wrong, that Plaintiff's Exhibits 160 and 163, the correspondence between you and Mr. Logan, indicates

that you did discuss a joint venture at least in sodium chlorate?

A. That's correct.

Q. And the only question in your mind is whether that joint venture also included ammonium perchlorate?

A. Right.

Q. Now, can you tell us whether at any time following the correspondence and conversations with Mr. Logan, covered by Exhibits 154, 160, 163 and 164, Pennsalt ever again considered an independent venture in the East for producing and selling sodium chlorate, with or without ammonium perchlorate?

A. Without ammonium perchlorate I think there is no [fol. 785] question about it, we did not further consider it. With ammonium perchlorate I cannot answer you. I don't know.

Q. You don't recall?

A. No.

Q. Returning your attention, Mr. Drake, to Plaintiff's Exhibit 111, Mr. Logan's memorandum to the file dated February 4, 1958, can you tell us whether subsequent to the date of that meeting Pennsalt ever moved in the chlorate or perchlorate field without keeping Olin informed?

A. Yes, we did.

Q. Can you tell us what moves Pennsalt took following the date of this meeting, where Olin was not informed?

A. We developed internally data on sodium chlorate and ammonium perchlorate.

Q. And that data which you developed and which led to the action of the meeting of November 3, 1958, recorded in Plaintiff's Exhibit 146, was the subject of your discussion with Mr. Logan, assuming Plaintiff's Exhibit 164 correctly describes the joint venture discussions as covering both sodium chlorate and ammonium perchlorate, is that correct?

A. Did you say that data or those data, or did you say that subject?

Q. If I said that data I meant that subject.

Mr. De Lone: May I ask to have the question repeated?

(The reporter read the question.)

[fol. 786] The Witness: The answer is no.

By Mr. Freed:

Q. And if we amend my question to confine itself to the subject matter of sodium chlorate-ammonium perchlorate, rather than the underlying data, is the statement in the question correct?

A. Assuming this heading is correct in 164, as I have said several times, I must have discused with Olin Mathieson the subject of sodium chlorate and ammonium perchlorate. That is the only statement that I feel that I can make.

Mr. Freed: I have no further questions, your Honor.

Redirect examination.

By Mr. De Lone:

Q. Mr. Drake, do you have Plaintiff's Exhibit 163 before you, the letter from Mr. Logan to you dated April 7, 1959? And will you also get, while you are looking for it, Plaintiff's Exhibit 164?

A. Is that another letter from Logan?

Q. There are going to be four documents: Plaintiff's 160, Plaintiff's 163, Plaintiff's 164, and Plaintiff's 154.

A. I have the 154, 163 and 160.

Q. How about 164?

A. All right, I have it.

[fol. 787] Q. Had you received Mr. Logan's letter, PX-163, of April 7, 1959, before the Management Committee meeting reported in PX-164, of April 9, 1959?

A. The only marking I have on here is the Industrial Division, that I can read, which was received April 9.

Q. Can you tell from the text of PX-163, and the text of PX-164, whether your advice to the board on April 9, 1959, was pursuant to receipt of the letter which is PX-163?

A. I believe you said to the board. You meant to the Management Committee?

Q. I'm sorry, to the Management Committee.

A. Pose the question again, will you please?

Q. Can you tell from the text of PX-164 whether the advice you gave to the Management Committee meeting on April 9, 1959, was pursuant to the advice you had received from Mr. Logan in PX-163 and 160?

A. I believe it must have been pursuant to, because of

the reference in 163 particularly to McIntosh or Lake Charles.

Q. PX-160 had dealt with the high power costs at Brunswick, Georgia, had it not?

A. Yes.

Q. If the power costs are too high for a sodium chlorate plant, what does that mean with reference to the feasibility of a combined sodium chlorate-ammonium perchlorate plant?

[fol. 788] A. Power, as I think has been testified already, is a very major cost in sodium chlorate production, and the cost of sodium chlorate, in turn, is a major factor in the cost of ammonium perchlorate production. Furthermore, there is some power required for ammonium perchlorate. Therefore, the power factor on either sodium chlorate or ammonium perchlorate, singly or together, is a very real consideration in any evaluation of the profitability of a project containing either one or both of those products.

Q. If a site for a chlorate plant is eliminated, sodium chlorate alone is eliminated, because of high power cost, would that tend likewise to lead to the conclusion that a joint sodium chlorate-perchlorate plant should not be considered for the same site?

A. That is correct.

Q. Do you recall any other communication you had from Mr. Logan other than PX-160 or 163, on which you based your report to the Management Committee in PX-164, other than those two exhibits?

A. I do not.

Q. Do you recall anything more of the substance of any discussions you may have had with Mr. Logan in January, February or April of 1959, other than these two letters, PX-160 and 163, and what is indicated in the second para-
[fol. 789] graph of item A-2 of PX-154?

A. I do not.

Q. You were asked on your cross-examination about when someone authorized by Pennsalt had had discussions with Olin Mathieson which were authorized, and you made reference to the fact that the first instance of this, so far as you were concerned, was when Mr. Shanaman was authorized to discuss something with Olin and report to you. Would you look at PX-102 and tell me if that is the occasion to which you have reference?

A. That is correct.

Q. What was it that Mr. Shanaman was authorized to do with reference to discussion with Olin Mathieson on December 5, 1957?

A. He was authorized to talk with Olin Mathieson regarding the sale of chlorate out of the Portland production to Olin Mathieson for resale.

Q. And with reference to processing any discussion of joint venture, who was authorized to do that?

I'll withdraw that question. I think the document speaks for itself.

Mr. Drake, as the president and chief executive officer of Pennsalt, has it been in the period of 1955 to the present time your policy to seek——

[fols. 790-794] The Court: Don't lead the witness.

Mr. De Lone: I withdraw that. I have no further questions.

Mr. Freed: The Government has no further questions.

The Court: Now you are both finished with Mr. Drake?

Mr. Freed: The Government is, your Honor.

The Court: And you are finished with him, Mr. DeLone?

Mr. De Lone: Yes, sir.

The Court: You are excused.

. . . . . .

[fol. 795] Lawrence A. Adams, called as a witness by the plaintiff, in rebuttal, being first duly sworn, testified as follows:

[fol. 796] Direct examination.

By Mr. Copley:

Q. Mr. Adams, by whom are you employed?

A. American Potash & Chemical Corporation.

Q. What is your position with AmPot?

A. Treasurer.

Q. How long have you held this position?

A. Since 1944.

Q. Does American Potash have a sodium chlorate facility at Aberdeen, Mississippi?

A. It does.

Q. Could you tell us when that plant was constructed?

A. It went on stream the latter part of 1958.

Q. Do you know approximately when the construction of that plant began?

A. Late 1957.

Q. Are you appearing here today pursuant to subpoena issued by the Government?

A. I am.

Q. Did that subpoena call for you to bring with you documents relating to the decision of AmPot to construct its sodium chlorate facility at Aberdeen?

A. It did.

[fol. 797] Q. Did you bring with you minutes of the board of directors' meetings at which AmPot authorized the construction of its facility at Aberdeen?

A. I did.

Q. I would like to show you this paper and ask if it is one of the documents you brought with you, and if it is the extract from the board of directors' meeting of February 18, 1957?

A. It is.

Q. Would you read that portion of the extract into the record?

Mr. De Lone: If your Honor please, I object to that. I don't understand either the relevance or what this testimony is offered to rebut. It is some resolution of AmPot's board of directors.

The Court: What do you want, an offer of proof before this goes in?

Mr. De Lone: I think if we had an offer of proof we would be clear on where we are going.

The Court: There is no jury, but we will have an offer of proof if you like. Do you wish the witness withdrawn when the offer is made?

Mr. De Lone: No, sir, I have no feeling of the necessity of withdrawing the witness.

[fol. 798] The Court: What will the proof consist of, if admitted. What will be its rebuttal significance, Mr. Copley?

Mr. Copley: Your Honor, the proof which we propose to show is this, and I was beginning by asking Mr. Adams to read into the record the minutes of the board meeting

at which AmPot authorized the sodium chlorate facility at Aberdeen.

We have a report which has previously been displayed to the defendants, which was the basis for AmPot entering into the sodium chlorate business at Aberdeen. These are the two documents which I wanted to show to Mr. Adams this morning.

The defendants in this case have put in considerable evidence about return on investment. They have done this for the purpose of showing that Pennsalt and Olin combined to construct a sodium chlorate facility at Calvert because the rate of return on a lone venture was too low under its corporate policy to warrant an independenl operation.

We propose to introduce this rebuttal evidence showing that a competitor, AmPot, a competitor of these defendants in the sodium chlorate industry, constructed a sodium chlorate facility during the same period of time and in the same general geographic area that these two companies were independently evaluating.

[fol. 799] The Court: Is that to demonstrate a policy on the part of AmPot to seek a lower rate of return as a minimum than the rate of return sought by Olin Mathieson and Pennsalt? Or is it to show that the rate of return might have been greater to Pennsalt and Olin Mathieson than their forecast showed and that therefore their forecasts were not bona fide?

Let's assume that AmPot did go it alone, so to speak. How does that bear upon the defense testimony?

Mr. Copley: Your Honor, we do not believe that a low rate of return on investment justifies competitors or potential competitors in forming a combination not to compete.

The Court: You mean if their best estimates show that they had operated at a loss, they were obligated under the law to operate at a loss so as to be competitive?

Mr. Copley: No, sir, not at a loss. I don't believe that is the issue.

The Court: Well, at a marginal profit.

Mr. Copley: At some profit, your Honor.

The Court: Mr. DeLone, I am going to have to hear the testimony and evaluate it. It seems to me your objection is one of relevance, and that is one that we can best determine after we have heard it rather than before. After all,

in effect I am hearing the testimony now in bits. I think that I would like to hear the testimony and give it whatever [fol. 800] weight, if any, that I think it is worth.

Mr. De Lone: Very well, sir.

By Mr. Copley:

Q. Mr. Adams, would you read that extract of the board meeting of February 18, 1957 into the record?

A. (Reading)

"The chairman then referred to previous discussions with the directors and advised the meeting that after extensive market and engineering studies, it appeared desirable to construct a plant to manufacture sodium chlorate at Aberdeen, Mississippi.

"After full discussion, on motion duly made and seconded, it was resolved that the corporation purchase approximately 586 acres of land near Aberdeen, Mississippi, and construct thereon a plant for the production of sodium chlorate, as described at this meeting, at an estimated cost of $5,000,000."

Q. Was this board of directors meeting of February 18, 1957 the meeting at which AmPot authorized the construction of its sodium chlorate facility at Aberdeen?

A. It was.

Q. Mr. Adams, I show you a document which has been [fol. 801] marked Plaintiff's Exhibit 415 which is from Peter Colefax to the board of directors, and which is dated February 12, 1957.

Does this document come from your company files?

A. It does.

Q. Was it kept in the regular course of business?

A. It was.

Q. Who is Peter Colefax?

A. The president of American Potash & Chemical Corporation.

Q. Was he the president of AmPot on the date of this memorandum, namely, February 12, 1957?

A. Yes.

Mr. Copley: I would like to read into the record the first paragraph of this memorandum.

"We propose to build a plant near Aberdeen, Mississippi, for the initial production of 15,000 tons per year

of sodium chlorate for delivery to present and potential Eastern customers. The estimated cost of this facility is $5,000,000 and the total investment, including working capital, is estimated at $5,500,000. On the basis of the present market price of sodium chlorate the estimated return on the total capital investment [fol. 802] is 8.0%."

By the Court:

Q. Mr. Adams, do you know whether this 8.0% was before or after taxes?

A. It is after taxes.

Mr. Copley: I should also like to read into the record——

The Court: Excuse me.

By the Court:

Q. What would the estimated return on total capital investment be before taxes?

A. On a percentage basis?

Q. Yes.

A. On page 3 of the memorandum are the relative figures there.

Q. It would be roughly twice the 8%?

A. Yes. The taxes provide for Federal and also State income taxes.

Q. I suppose that is a matter of arithmetic anyway, to figure out.

A. I cannot per cent that fast from those figures.

Q. In other words, look at page 3, $437,000 is the 8% figure?

A. The 8% figure related to the total investment of five [fol. 803] and a half million.

Mr. Copley: I would also like to read into the record the last paragraph of this memorandum beginning on the bottom of page 4.

"We recommend that the board approve the sodium chlorate expansion project at its next meeting so that we may proceed without delay on detailed engineering. Time is important as we must promptly make a firm power contract with TVA in order that they may have the necessary power lines and substation approved and

installed by the time our plant should be ready to operate. This is planned for July 1, 1958."

By Mr. Copley:

Q. Is this proposal, Plaintiff's Exhibit 415 the one approved by the directors at a meeting of February 18, 1957?

A. It had been presented to the board and the board approved the plant based on this report.

Mr. Copley: Your Honor, I would like to offer into evidence Plaintiff's Exhibit 415.

The Court: This has not been offered in evidence yet? I thought this was in evidence.

Mr. Copley: No. This is part of our rebuttal case. It has been marked but not initialed by the Clerk.

[fol. 804] The Court: I see. Is there any objection?

Mr. DeLone: I assume that with this, as with all other exhibits, it would come in subject to objection in light of your Honor's ruling.

The Court: That is correct. Do we have a broad understanding that everything that has gone into evidence in the way of documentary evidence is subject to objection by either party?

Mr. DeLone: In brief, and with that thought in mind we thought we did not have to spend time with it.

The Court: That was your understanding?

Mr. Copley: That was our understanding.

The Court: It is admitted subject to the general understanding which we had as to pertinence.

Is it general admissibility or pertinence, Mr. DeLone?

Mr. DeLone: General admissibility.

The Court: All right. It is admitted subject to these reservations which the record shows.

(Plaintiff's Exhibit No. 415 previously marked for identification was received in evidence as "Plaintiff's Exhibit No. 415.")

Mr. Freed: Your Honor, it was our understanding that the reservation of objections did go to relevance and mate-

[fol. 805] riality, and not to matters which could have been cured——

The Court: I do not know what the record shows, but

whatever the record shows initially to be the understanding this paper will come in subject to that reservation.

Mr. Copley: We have no further questions of Mr. Adams.

Cross-examination.

By Mr. DeLone:

Q. Mr. Adams, will you turn to page 3 of PX-415, and in the last paragraph on that page it opens with the words:

> "While the return on this investment is not as attractive as some we have proposed there are a number of factors that must be taken into consideration."

Did American Potash Company, to your knowledge, at this time, February 12, 1958, have some general policy with reference to the return on investment which it sought in new projects?

If you do not know I hope you will simply say so.

A. As a policy matter, I do not know.

Q. Are you familiar with other projects that were in fact taken on by American Potash which did offer a more attractive return than this one?

[fol. 806] A. I cannot quote any return figures.

Q. You are the treasurer of American Potash?

A. Yes.

Q. I understand that you did not take part in the preparation of this memorandum, PX-415, that was Mr. Colefax, the president?

A. That is correct.

Mr. DeLone: No further questions.

Mr. Copley: No further questions.

The Court: You are excused, Mr. Adams.

Mr. Freed: Mr. War.

THOMAS L. WAR, called as a witness by the plaintiff, in rebuttal, being first duly sworn, testified as follows:

Direct examination.

By Mr. Freed:

Q. Mr. War, by whom are you employed?

A. The Pacific Engineering & Production Company of Nevada.

Q. Where is your company located?

A. Henderson, Nevada.

Q. What is your position with Pacific Engineering?

A. I am the Executive Vice President and Secretary.

[fol. 807] Q. How long have you held that position?

A. Since December 1, 1958.

Q. Prior to that time where were you employed?

A. By the American Potash & Chemical Corporation.

Q. Your position there?

A. I was the manager of administrative services for their Henderson plant.

Q. Mr. War, how big is Pacific Engineering?

A. In terms of people we have 63 employees at this time.

Q. Approximately what is the dollar volume of the assets of Pacific Engineering?

A. The assets are approximately $2,000,000.

Q. How about the sales?

A. Between one million and one and a half million dollars a year.

Q. As of the present time in what business is Pacific Engineering engaged?

A. In the manufacture and sale of ammonium perchlorate.

Q. Can you tell us when Pacific Engineering was formed?

A. It was incorporated in November of 1955.

Q. As of the present time what is its capacity for producing ammonium perchlorate?

A. Approximately 2500 tons per year.

[fol. 808] Q. Does Pacific Engineering contemplate any change in the activities which it has been conducting up to the present time?

A. We intend to expand our capacity and provide the manufacture of our own sodium chlorate.

Q. What size sodium chlorate plant do you contemplate building?

A. It will be rated at approximately 5,000 tons a year.

Q. Is there any concomitant increase in ammonium perchlorate?

A. Yes. Ammonium perchlorate will be doubled to approximately 5,000 tons a year.

Q. Can you tell us, Mr. War, why Pacific Engineering is increasing its capacity for producing ammonium perchlorate?

Mr. DeLone: Objected to.

The Court: Overruled. State your ground, Mr. DeLone.

Mr. DeLone: It is irrelevant.

The Court: Overruled.

The Witness: We feel that the demand for ammonium perchlorate is increasing to the point where we can successfully market the increased production.

By Mr. Freed:

Q. Can you tell us why the Pacific Engineering is em- [fol. 809] barking on the production of sodium chlorate?

A. Well, sodium chlorate is a raw material in the manufacture of ammonium perchlorate. We are presently buying it. We feel that we can manufacture it cheaper than we can purchase it.

By the Court:

Q. Does it take about a ton of sodium chlorate to produce a ton of ammonium perchlorate?

A. As a rule of thumb, yes, that's about right.

By Mr. Freed:

Q. When did Pacific Engineering decide to build a sodium chlorate plant?

A. In July of this year.

Q. When will your plant be completed?

A. We hope to have it finished during the first quarter of next year.

Q. Mr. War, can you tell us what the total investment in the expansion program for sodium chlorate and ammonium perchlorate will be?

A. The total investment for the entire program is between $1,500,000 and $2,000,000.

Q. In the production of sodium chlorate which your company contemplates, where will the process come from?

A. It is a process that we have developed.

[fol. 810] Q. Is it an electrolytic process or is it another?

A. It is an electrolytic process.

Q. Can you tell us where the money to finance the expansion will come from?

A. We borrowed it.

Q. From whom did you borrow it?

A. From American Cyanamid Company.

Q. Can you tell us briefly what the terms of that borrowing were?

A. We borrowed a sum of money which is evidenced by promissory notes secured by deed of trust on all of our assets.

Q. And the amount of the loan, approximately?

A. Approximately $2,400,000.

Mr. Freed. I have no further questions.

Mr. De Lone: Would your Honor indulge us for a moment?

The Court: Very well.

Cross-examination.

By Mr. Connelly:

Q. Mr. War, in connection wtih your testimony concerning the loan made from the American Cyanamid Company, in what business is the American Cyanamid Company engaged?

A. Manufacture and sale of chemicals.

[fol. 811] Q. When did you have your first negotiations with American Cyanamid on the subject of the proposed loan?

Mr. Freed: I object, your Honor. I don't see the relevancy.

The Court: I overrule the objection. I will hear the testimony and evaluate it in the light of the entire record.

The Witness: In February of this year.

By Mr. Connelly:

Q. Does the loan carry interest?

A. Yes, sir.

Q. At what rate?

A. 4½%.

Q. Are there any other terms and conditions of your loan arrangement with American Cyanamid other than those you have stated?

A. Its a long and involved document. Yes, sir, there are many other provisions.

Q. Does it have provisions other than those relating simply to the borrowing of money and the repayment of the loan? If so, will you state what those other provisions are?

A. Yes, there are certain options involved in consideration of the loan, one being that American Cyanamid has an option to license certain of our processes for their [fol. 812] use if they so desire, on the same terms as have been granted to other people.

Q. When you say to license, you mean to receive a license?

Q. To receive a license, yes, sir, and to make payments to us.

Secondly, they have an option to acquire all of the assets of the corporation at a minimum price, or a price based on a formula based on earnings, whichever is the higher. They have an alternative option to purchase common stock in the amount equal to that presently outstanding, so that they would own 50% of the common stock of the company.

Q. What is the approximate size of the American Cyanamid Company in terms of its dollar assets?

A. I don't know.

Q. Do you have any information as to the size of the company in terms of the volume of its sales?

A. No. I know it is an extremely large corporation.

Q. In connection with the development of the electrolytic process to which you have testified, did you personally participate in the work of that development?

A. No, sir.

Q. How long experience had you had with the American Potash Company before you went with Pacific Engineering?

[fol. 813] A. American Potash purchased the company in

which I was employed in November, 1955. I left them at the end of November, 1958.

Q. In the course of that period of time did you become generally familiar with the manufacturing productive facilities and processes of the American Potash Company?

A. Only in a lay fashion. I am not a technical man.

Q. What did you do between the time when you left American Potash Company and formed your association with Pacific Engineering, or was there any lapse of time?

A. There was no lapse of time.

Q. I am not sure whether you testified, Mr. War, as to where your ammonium perchlorate plant is located.

A. It is located near the town of Henderson, Nevada.

Q. And where is it that your proposed sodium chlorate plant is about to be constructed?

A. At the same location.

Q. Am I correct in understanding that the Pacific Company has been in the business of producing ammonium perchlorate since 1958, or does it go back before that?

A. It was shortly after that. We put our first pilot cells on the line in December, 1958. There was no actual production until 1959.

Q. By the way, I neglected to ask you, Mr. War, with [fol. 814] reference to the process, the electrolytic process that you have for the production of sodium chlorate, is that a new process?

A. It is difficult to say new about a process like that, sir. The manufacture of sodium chlorate by electrolytic process is of course well known for many years. We think we have some innovations, let us say.

Q. Does your company hold some patents on that process or those processes?

A. It does not now, no.

Q. During the period of time that you have been producing ammonium perchlorate from sodium chlorate, what has been your source or sources of supply of sodium chlorate?

A. We have purchased sodium chlorate through a distributor, Chipman Chemical Company. They have supplied it to us from three manufacturers: Pennsalt, American Potash, and some French material that I believe was manufactured by Pechiney.

Q. Do you know roughly what proportion of the total supply that you have had has been received from the French or foreign source?

A. I don't, no.

Q. I take it, Mr. War, that upon the completion of your sodium chlorate plant you contemplate that the Pacific [fol. 815] Engineering Company will cease to be a consumer or a purchaser of sodium chlorate in the sodium chlorate market, is that right?

A. That is correct.

Q. To what class of customer, Mr. War, do you sell ammonium perchlorate?

A. We sell to manufacturers of solid rocket fuels.

Q. Manufacturers, I take it, of solid rocket fuels ultimately destined for the Government of the United States?

A. That's correct.

Q. That is the entire sale of your ammonium perchlorate?

A. Yes, sir.

Q. Has that been true during the entire period that you have been producing and selling ammonium perchlorate?

A. Yes, sir.

OFFERS IN EVIDENCE OF DEFENDANTS' EXHIBITS NOS. 1 THROUGH 49 AND PLAINTIFFS' EXHIBITS NOS. 416 THROUGH 428, AND COLLOQUY THEREON

Mr. Connelly: That's all.

Mr. Freed: The Government has no further questions, your Honor.

(Witness excused.)

The Court: Do I understand that both sides have now rested, save for the introduction of documents?

Mr. Freed: Your Honor, the Government would like an opportunity to examine in detail the lists shown to it by the defendant this morning in order to prepare their own list of [fols. 816-818] documents for offering into evidence to be sure there are no duplications, and in an effort to secure sufficient number of copies.

We would like an opportunity, if we could, to submit our lists or the documents themselves to the reporter or

to the clerk by two o'clock if we could, no later than two o'clock.

The Court: You will have need of me in the courtroom then at two o'clock to formally rest. Is that your desire?

Mr. Freed: Your Honor, we would see no need to have the court in session at that time, and we would propose to rest at this time and simply submit the list to the clerk afterwards.

[fol. 819] — Defendants' Exhibits

DX-1	11/11/58	Eastman to Sloan (re Perchlorate)
DX-2	8/ 1/60	Staples to Land
	8/ 9/60	McGuire to Karr
DX-3	6/18/53	Drake to Logan
DX-4	7/ 9/53	F. C. Shanaman to Drake
DX-5	12/ 1/54	Drummond to Drake
DX-6	6/26/53	F. C. Shanaman to Drake
DX-7	12/20/57	Willits to file
DX-8	7/ 9/58	Drake to F. C. Shanaman
DX-9	7/18/58	F. C. Shanaman to Drake
DX-10	7/18/58	Karr to Fred Shanaman
DX-11	12/23/58	Appropriation Committee Meeting No. 12
DX-12	8/23/56	GTC (Collins) data
DX-13	3/26/57	Gardiner to Wojcik
DX-14	1/17/58	Huntington to Evans
DX-15	1/31/58	Evans to Woodard
DX-16	1/31/58	Logan to Frost
DX-17	2/ 3/58	L. M. Shanaman to Olin (Att. Frost)
DX-18	4/ 8/58	Theobald to L. M. Shanaman
DX-19	5/ 6/58	Smart to Otis Tucker (Brunswick)
DX-20	12/ 9/58	Frost to L. M. Shanaman
DX-21	12/11/58	Gardiner To Wojcik
DX-22	4/14/59	Frost to Logan

[fol. 820]

DX-23	4/21/59	Logan to L. M. Shanaman
DX-24	5/ 1/59	Frazier to King
DX-25	7/28/59	Shively to King
DX-26	8/18/59	Brudeshaw (TVA) to Stein
DX-27	8/19/59	Teletype re C. & E. News
DX-28	9/ 4/59	Burdeshaw (TVA) to Stein
DX-29	9/23/59	Stein to Burdeshaw (TVA)
DX-30	1/29/60	Clem to file
DX-31	2/ 2/60	Clem to Williamson (with 2 tables entitled "Sodium Chlorate Plant—25,000 Tons Per Year" attached)
DX-32	2/18/60	Howe to Hopkinson
DX-33	3/ 8/60	Reed to Hopkinson
DX-34	4/11/60	Willits to McWhirter
DX-35	4/14/60	Clem to file
DX-36	4/25/60	Williamson to Hopkinson
DX-37	7/15/60	CAR 172-001-377
DX-38	7/15/60	CAR 172-001-377B
DX-39	7/18/60	Mayne to Otterstrom
DX-40	7/27/60	Penn-Olin Estimated Earnings
DX-41	8/16/60	Woodard to McWhirter

Defendants' Exhibits (Continued)

DX-42	8/22/60	Reed to Osborne, Staff Coordinating Committee and CAR Committee

[fol. 821]

DX-43	10/ 7/60	Garland to Shively (One page document entitled "E. Imports" attached)
DX-44	10/12/60	Shively to Distribution "M"
DX-45	11/ 9/60	Nusloch to Pickens
DX-46	12/22/60	Preston to All District Offices
DX-47	2/14/61	Dalziel to Preston
DX-48		General Stipulations, Set II
DX-49		Plaintiff's Answers to Interrogatories 1-4, Set II

[fols. 822-845] Plaintiff's Exhibits

PX No.	Description	Date	Dep. Ex. No.
416	Pennsalt Price Schedule HC 300	1/ 1/58	
417	Theobald to Noakes	2/24/58	
418	Schiessel to Logan	4/ 3/58	
419	Woodard to LaLande	4/ 6/59	
420	Pennsalt Management Committee Meeting # 103	6/25/59	
421	Wojcik to Hightower	7/23/59	Wood 1
422	Lewis to Hightower	7/28/59	Wood 2
423	Winsor to Williamson	1/27/60	
424	Ramstad to Mills	4/29/60	
425	Clem to Ramstad	5/12/60	
426	Olin Minutes of Financial and Operating Policy Committee	9/27/60	
427	Pennsalt Appropriations Committee Meeting # 41	10/14/60 and 11/ 3/60	
428	Olin Corporate Staff Comments on Whither Report to Block (Extract)	10/14/60	

[fol. 846] IN UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

Civil Action 2282

UNITED STATES OF AMERICA, Plaintiff,

vs.

PENN-OLIN CHEMICAL COMPANY, et al., Defendants.

Transcript of Oral Argument—October 31, 1962

Wilmington, Delaware.

Before: Hon. Edwin D. Steel, Jr., Judge.

APPEARANCES:

Daniel J. Freed, Esq., Edward A. Copley, Esq., and Joseph H. Widmar, Esq., on behalf of plaintiff.

William S. Potter, Esq., on behalf of all defendants.

H. Francis De Lone, Esq., and John T. Subak, Esq., on behalf of defendant Pennsalt Chemicals Corporation.

Albert R. Connelly, Esq., and John W. Barnum, Esq., on behalf of defendant Olin Mathieson Chemical Corporation.

* * * * * * *

[fol. 847] COLLOQUY BETWEEN COURT AND MR. FREED

Mr. Freed: What is involved in this case, as the evidence has demonstrated is a combination to produce at the outset sodium chlorate, a common industrial chemical which has been produced in the United States since 1896. It involves a growing market for that product heretofore always met by the entry or expansion of independent companies, sometimes with sales agents. It involves an industry in which there has been ease of access historically; a number of small companies have participated and often to fill out the chlorine caustic line of an industrial chemical.

This case also involves an industry which, for the past 20 years, has been concentrated and in which at the time of suit there had been no new face, no new entrant, apart from changes of ownership, in 20 years.

The industry at the time of this suit was characterized by the absence of vigorous competition in the following sense: Pennsalt had maintained high, unusually high, prices for sodium chlorate in the western part of the United States. [fol. 848] In the east, according to Olin's own study of the market prior to embarking on Penn-Olin, prices were stable; there were no discounts, concessions, or premiums allowed. Historically Pennsalt found little effort to expand existing uses or develop new uses. And I there quote from a Pennsalt market report.

The technology of production in this field had been static and conventional for a number of years, but also in 1960, at the time this venture was formed, there were indications that a number of newcomers were considering entry into the field.

It was, in short, at the time of the Penn-Olin joint venture agreement, a situation which demonstrated a need for and a potentiality of some new blood and innovation.

. . . . . .

[fol. 849] The Court: You are about to address yourself to the proposition stated somewhat differently that if there had been no organization of Penn-Olin, if there had been no such organization then as a matter of reasonable probability both Olin and Pennsalt would have independently set up a plant and began to sell certainly into the southeastern market, leaving aside any necessity of the relevant market at the moment?

Let me state it again. It probably wasn't very clear.

If there had been no joint venture agreement and what ensued therefrom the Government is contending as a matter of reasonable inference and probability both Olin Mathieson and Pennsalt would have set up a plant and engaged in the manufacture and sale of sodium chlorate to the paper mills in the southeastern part of the United States?

Mr. Freed: I believe that is correct, Your Honor.

. . . . . .

[fol. 850] Mr. Freed: We think that the Government's case is made by showing that Pennsalt was a potential com-

petitor, a probable competitor in terms of its capability and interest.

The Court: But is it not necessary under the law to go beyond that? The law, it seems, to me, requires a weighing of whether the competitive situation which came about as a result of the joint venture was more vigorous or less vigorous than the competitive situation would have been if that joint venture agreement had not been entered into. Isn't that really the vital consideration?

Mr. Freed: Your Honor, I think that is one consideration to focus on, but I do not think it is the vital consideration.

The Court: Let's make this assumption:

The competitive situation was more vigorous after the joint venture agreement than it would have been had there been no joint venture agreement.

[fol. 851] On what theory can the Government prevail?

Mr. Freed: The principal basis for the Government's case here is that competition must be engaged in by corporations on an individual basis. Combinations between companies may not take place where those companies are actual or significant potential competitors.

The Court: Irrespective of whether the competitive situation would be, as I have used the words, more vigorous after the agreement than before?

Mr. Freed: Your Honor, if we had a situation where there was a need on the part of this industry for a new competitor, a totally unsatisfied need on the part of consumers, and nobody grasped the opportunity, it might be in that situation that a combination would be found to be justified.

The Court: I am going to press on this a little because I am not quite sure of your theory, and I want to give you opportunity to explain it to me on this posture.

I don't say it is the conclusion I will come to, but if I should reach the view that as a result of the formation of Penn-Olin a more vigorous competitive situation existed than would have existed if there had been no joint venture agreement, if I should reach that conclusion, or if I should reach the——

Let me state it otherwise.

[fol. 852] —that the likelihood there it wasn't reasonably

likely that the competitive situation would have been greater in the absence of the joint venture agreement than under the joint venture agreement, then on what theory can the Government prevail?

Mr. Freed: The Government can only prevail, Your Honor, if it demonstrates that in a significant market, in a significant area of competition there has been a lessening of competition, and, therefore, I think if Your Honor would find that there was no lessening of competition in any market, but that the combination only served to enhance competition, then I think by definition Your Honor could make a finding against the Government.

It is the Government's burden to show that competition was restrained or lessened.

The Court: And that burden can be met only by showing that there would have been more competition absent the agreement than there was competition under the agreement?

. . . . . .

[fol. 853] Mr. Freed: I would like to return, if I may, your Honor, to the question which you addressed to counsel before the recess.

I believe that, if you find that there was no probability that Pennsalt would enter the business alone, that there was no probability that Olin would have entered alone, and that there was no probability that anyone else would have entered the business alone, absent this joint venture, then by definition we think that the creation of a new company or a new plant would have simply added to a situation and have deprived the industry of nothing.

It is our contention that Pennsalt's qualifications plus interest for the sodium chlorate business made it a probable competitor, a significantly potential competitor, that Olin's qualifications and interest made it a potential competitor, and that, in addition, this was an industry which was attractive to many customers and that there was a likelihood that others would enter the business.

The Court: Mr. Freed, to pursue this just a little bit, make the asumption that I should find that if there had been no joint venture, there was a reasonable probability that either Pennsalt or Olin, but not both, would have

independently entered the field. Would I find from that that there was a substantial lessening of competition by [fol. 854] reason of the joint venture?

Mr. Freed: Under the facts of this case, your Honor, we believe that that would be sufficient for violation, and it is my intention to detail for you the losses to competition from the failure of these companies to go in individually. There were plans, there were likelihoods, on the part of Pennsalt, what contribution it would make to competition and that Olin might make to competition, which were lost completely by the joint venture. There were many innovations that disappeared because they simply combined existing talents.

The Court: If you make the assumptions—these contributions which would have been produced by the individual entry of Olin and Pennsalt would not have all occurred if you make the assumption that only one of them would have entered?

Mr. Freed: That is correct, your Honor, but some of them would have occurred. But I think, to answer your question and to analyze the effect on competition under the situation which you have outlined, we must return to the areas that I outlined earlier of inquiry into effects on competition. First, we have the competition——

The Court: What is the assumption to be the predicate for this statement you are going to make?

Mr. Freed: That we must examine under the hypothesis [fol. 855] that your Honor finds that one but not both of these defendants would have entered the business alone.

The Court: Let's be more specific. Let's assume Pennsalt—you have just dealt with Pennsalt and its thinking on the subject—let's assume Pennsalt would and Olin would not. Where would you have had a more vigorous competitive situation as a result of that than you have at the present time?

Mr. Freed: The focal point of our inquiry again, your Honor, is not to determine whether there was an incidental benefit to competition from this case but whether there was a restraint of trade or a lessening of competition. The statute is violated if the Government shows that in any market there was a lessening of competition. Once that

is shown, the benefits that take place elsewhere are not relevant for consideration.

We saw that in the Bethlehem case quoted in our brief, and this is the general theory of anti-trust, that if there has been a restraint of trade, some incidental benefits to the public are not for these companies to grant us by combination. We must first inquire into competition between Pennsalt and Olin, and under the hypothesis which your Honor has posed there would be no elimination of competition between Pennsalt and Olin because your Honor would have found that Olin was not going to be a competitor.

[fol. 856] The second inquiry would be, Is there an adverse effect on competition from the combination of Pennsalt and Olin, on the one hand, and all other potential competitors on the other? Now, the evidence in this case discloses that by combining their resources they were able to build a plant and time an announcement within their contemplation which would pre-empt the market from other interested newcomers.

If under the hypothesis that your Honor——

The Court: Well, Pennsalt was talking about pre-empting the market from others if it went into the business on its own.

Mr. Freed: The question of the size of plant was never resolved. Pennsalt did talk about a twenty or twenty-five thousand ton plant, and it also talked about smaller ones. Olin talked about a fifteen thousand ton plant. Other plants in this industry were in the twelve thousand ton range and smaller. The belief was that a twenty-five thousand ton plant would probably satisfy the present and foreseeable needs of this market. Nobody except this joint venture ever built a plant more than twelve thousand tons in size at the outset. And if your Honor finds that Olin would not have entered this business and that Olin's participation with Pennsalt did not enable the plant to be built of such a size as to eat up most of the remaining capacity [fol. 857] of the market, then you would be justified in finding that there was in fact no injury to other potential competitors from the Pennsalt-Olin combination.

The third area of inquiry would be, Did the combination of competitor Pennsalt and non-competitor Olin serve to

lessen competition or give unreasonable advantages to the Pennsalt-Olin, Penn-Olin combination, over other people already in the sodium chlorate business? And we have detailed in our findings the enormous advantages which this combination gave to Pennsalt and Olin over the other people who were in the business in terms of size and contacts and experience and sodium chlorate generator systems.

The Court: Of course, it seems to me you get into a little bit of a paradox when you talk about the benefits which would have flown if Olin or Pennsalt had gone it alone, benefits which I suppose would have made them more competitive, and then at the same time you decry these benefits which increase the competitive capacity of the joint company. I mean, anybody who is trying to be competitive is going to try to improve its position one way or another. The question is whether or not they do it in a way which violates the law. That is what it comes down to. You say you can do it one way, but you can't do it through the agreement or combination route. I suppose maybe that is the answer to what I was about to ask.

Mr. Freed: I believe the cases say, your Honor, that [fol. 858] an individual non-monopolistic enterprise may lawfully do many thinks which give it an advantage over competitors and may make it more difficult for others to compete or to enter a market——

The Court: Let me put this precise question to you, and if it can be answered yes or no, I would like it. If it can't be, you will have to explain your answer. Does the record support the conclusion that if there had been no joint venture, both Olin Mathieson and Pennsalt would have built a new sodium chlorate plant and embarked in the business?

Mr. Freed: With certainty, no, your Honor.

The Court: Not with certainty, but as a matter of reasonable probability.

Mr. Freed: I think the record does support the conclusion that the capabilities and resources and background for this business which were possessed by Pennsalt and Olin made each of these companies abundantly well equipped, as well as intentioned, to enter the business——

The Court: A company might be well equipped to enter the business, but certainly the productive capacity in the

industry would be a very vital factor, would it not, in management's determination?

Mr. Freed: Certainly.

The Court: I mean, if this were an industry with over-[fol. 859] capacity in sodium chlorate—there might be many companies that had the knowhow and the sales force, the technology. But certainly the productive capacity of the industry would be a pretty important factor.

Mr. Freed: It certainly would, your Honor.

The Court: Now, I want to press this a little. There would not have been a simultaneous determination, in the Government's view, not the same day and hour, certainly, by Pennsalt and Olin Mathieson to go into the business? You would not go so far as to say the record supported that, would you?

Mr. Freed: No, your Honor.

The Court: Presumably there would be some, I should suppose, reasonable interval between definitive decisions, and if that is a fair assumption, then would not the fact that, we will say, Pennsalt by hypothesis announced its intention to build a large sodium chlorate plant be a real factor in probably determining Olin Mathieson not to? Or vice versa?

Mr. Freed: I believe that that would be an important factor, your Honor, but not necessarily a determining one. As your Honor knows, following the filing of this lawsuit, one more company, Pittsburgh Plate Glass, did enter the business. The announced size of that plant and the other [fol. 860] aspects of it are the subject of much in camera testimony, which we need not discuss here, and we also do not know whether the entry by that company was influenced by their predictions as to the Government's likelihood of success in this case. But it does show that despite twenty-five thousand tons of sodium chlorate capacity there was some thought that additional capacity was warranted in the industry.

The Court: Had it been in the manufacture of sodium chlorate before building its Lake Charles plant?

Mr. Freed: It had been in Canada, your Honor.

* * * * * * *

[fol. 861] Mr. Freed: Secondly, we have set forth at finding 70.0 of our Findings of Fact a chart which describes the manner in which all of the people presently in the sodium chlorate industry achieved that entry, and the purpose in securing testimony from competitors and in consolidating this evidence in our findings and at pages 32 [fol. 862] through 34 of our reply brief is to establish an objective standard for the Court's determination of whether or not Pennsalt and Olin were competitors, because we do not think that what they said their intent was is important; we think the Court's decision must be based on the capability of these companies, as established by their qualifications, compared with those of others.

The Court: Now, do you mean that if I should find that for one reason or another, good, bad or indifferent, they would not have gone into the business independently, that because someone else might have under similar circumstances, that the joint venture is violative of the Act?

Mr. Freed: That is our position, your Honor. We believe that subjective desire——

The Court: Now, I put it one way. I had supposed that your position was that because others had, under similar circumstances, if they were similar, entered the field was persuasive proof that these utterances by officers that they would not have entered the field were simply not true. There is a difference in the two approaches, it seems to me.

Mr. Freed: Your Honor, we believe that if a company adopts as its policy that it will not enter into a new business for which it has every capability because it will not compete on its own, it will not undertake risks, it will not [fol. 863] accept the profits that other competitors take, and that it will only enter these businesses for which it is fully qualified by combining with other people who are fully qualified, we think that that standard is impossible to adopt under the anti-trust laws. We think that every company is fully entitled to decide to enter the business and take the risks or to not enter the business for any reason it pleases.

The Court: But what you overlook on that approach is what the effect is on competition of the combination. If you create a competitive situation which was non-existent

and which was not going to be existent, how can that creation of a competitive situation lessen competition?

Mr. Freed: In order to answer your Honor's question we again must go back to examine all of the different areas in which the effect on competition must be measured. Under your Honor's hypothesis, that two companies decide they will not compete with one another, they will not enter the business alone, it is perhaps possible to find that no competition between them was eliminated by the combination. And on that point the defendants would be safe. However, the Court's inquiry does not stop with looking solely at what the two companies do with one another——

The Court: That seems to me to be clearly the fact, and that is the position of the defendants, that you must look [fol. 864] at the competition in a broader way and not simply one company viz-a-viz another.

Mr. Freed: And if your Honor finds that these defendants under no circumstances would have become competitive with one another, then perhaps you can find that they did not eliminate potential competition between them. But if you then go on to find that by combining they established an intent and an ability to pre-empt others from entering the business independently, then you find that competition has been injured and has been lessened because independent competitors have been foreclosed.

The Court: But again, as to whether or not independent competitors have been foreclosed, it seems to me you must have some pretty tangible and real evidence of that, or some facts from which that inference can reasonably be drawn, and not simply a matter of speculation that others might have come in if this joint venture had not been created.

Mr. Freed: Your Honor, in dealing with the Clayton Act, all of the cases culminating in the Supreme Court's recent decision in Brown should establish it as only a probability that competition is injured as the test. The Government need not show in this court that Company A or Company B would have entered. We need only show that there was ease of entry into the business, that there [fol. 865] were a number of companies interested and qualified, and that competition could have been achieved in this industry according to——

The Court: Isn't the question act whether it could have but whether it would have? Isn't that the critical thing? You talk about one word, but it seems to me that is the difference between your approach and the defendant's approach, almost, on that one word, could have and would have, not would have as a certainty but would have as a reasonable probability.

Mr. Freed: I believe that when your Honor introduces reasonable probability here that he thereby takes into account——

The Court: The "could"?

Mr. Freed: —the case of entry, the capabilities of others, and the capabilities of the defendants, and I do think that that one test accommodates everything which the Government and the defendants are presenting to you. You need not find a specific competitor who would have entered, but if you find that there is a reasonable likelihood that entry could have been achieved and that entry would have been achieved in this business because of its historical pattern and because of the existence of interested parties, including the defendants, then the test of the Clayton Act has been satisfied.

One very tangible effect of this joint venture, as pre- [fol. 866] dicted by the agreement made back in 1957 and now as admitted in the defendants' brief, is that Pennsalt is effectively removed as an Eastern competitor. The defendants state, at page 16 of their brief, that Pennsalt's production will be marked in the West now that Penn-Olin is on stream. This means that the 16 to 30 percent of sales of Pennsalt's sodium chlorate made in the East before will be wiped away and Pennsalt will for the first time become a company in the sodium chlorate industry confined in its market to one section of the country.

The Court: But you will have a substitute for Pennsalt in the East, and the question is whether or not that substitute can do a more effective job. If it can, then you haven't had any restraint of trade, except in that viz-a-viz sense which you have said is not the important sense; it is the overall sense of the effect of competition which has to be looked at.

Mr. Freed: I believe that if a combination results in dividing territories between competitors that your Honor

can not then go on to determine whether this is good or bad for competition.

The Court: Do you want to talk about this 1957 agreement now? We have not discussed that, and it is something I would like to hear you about. You are going to come to that in the development of your argument?

[fol. 867] Mr. Freed: I would be happy to answer any questions or to discuss it——

The Court: Well, several questions have occurred to me. Let's assume that I find that that agreement is not violative of the anti-trust laws, would the joint venture be?

Mr. Freed: Certainly, your Honor.

The Court: The joint venture would be. Now, suppose that I should find that the joint venture was not violative of the law, would the 1957 agreement be? In other words, are they independently, without reference of one to the other, violative of the law, the '57 agreement and the joint venture agreement?

Mr. Freed: We think they are, your Honor, but we think that your Honor can give independent consideration to the agreements between these companies when they didn't have a joint company and to the creation of the joint company itself, and each or both can be found to violate the anti-trust laws. The practical significance of combining the two here is that the 1957, '58, '59 and '60 arrangement between these companies is no longer in effect as much. Therefore, your Honor could find that it violated the anti-trust laws, but then there would be the question of relief: What do you do about it?

The Court: Well, suppose there had been no joint ven-

[fol. 868] ture and suppose this '57 agreement had continued in effect, it is your view that that would have violated the law?

Mr. Freed: It is our view, your Honor, that it did violate the law because it was entered into by two companies both of whom were intensely interested in and preparing for independent competition in the field and was designed to keep them from competing, and what they did was, they excluded Pennsalt from a market where it had been competing on its own.

. . . . . .

[fol. 869] Mr. Freed: There were a number of companies that were named through these years as considering the business. There was Pittsburgh Plate Glass, there was Solvay, there was Wyandotte Chemicals, there was Virginia Smelting. We don't know whether this exhausts the list. We do know that by virtue of the entry of Penn-Olin and the announcement, only one more company has come into the business, and your Honor knows the significance in terms of the manner of entry and the size of entry of that one company.

There is no telling what would have happened had only Pennsalt come in with a plant or only Olin come in with a fifteen thousand ton plant, how many more competitors might have come in. We can not state with certainty what [fol. 870] would have happened there. We do know that much more capacity of this industry would have been available for independent companies to consider embarking on the business.

[fol. 871] Mr. Freed: There is another that I have not mentioned here but which is detailed in findings 86 and 87, which is the reasonable likelihood that the combination of Pennsalt and Olin will in time dwarf the other members of the industry in the size and power and contacts and prospects for success in this business, because of the dominance which Pennsalt brings to the venture from its Western experience and the dominant Olin position in chlorine dioxide installations, and as a part of that category is the definite foreclosure of Olin itself as an independent customer of Hooker for sodium chlorate at Niagara Falls, and that is discussed in findings 86.0 through 86.4 and at pages 59-A and 60-A of our reply brief appendix.

Your Honor will recall that Olin was far and away the largest customer which Hooker's Niagara Falls plant had for sodium chlorate. It even remained the largest when its requirements were split in half, when there was a diver- [fol. 872] sion, and Hooker and the others in the industry will of course completely lose Olin as a customer of sodium chlorate in light of this combination.

And finally, competition in the sodium chlorate industry, we believe, will be the loser in cost and in price and in uses

because of the particular plans and benefits to competition which Pennsalt and Olin had independently programmed, and which were eliminated by the joint venture. I refer, first of all, to Olin's platinized titanium anode. According to the head of the Research and Development Department of Olin, and according to the documents which we have detailed in findings 82.1 and 65.4 and at pages 49-A and 50-A of the appendix to our reply brief, this anode constituted a very promising development which would reduce the cost of producing sodium chlorate and in the normal course of events might for the first time in this industry give a possibility for lower costs and lower prices and more vigorous competition in the production and marketing of the product. This invention and development in Olin's lab was completely halted when the joint venture was entered into and Pennsalt's conventional system was adopted.

The Court: Well, you mean the joint venture might throttle potential technological advances which would be important ultimately to the public?

[fol. 873] Mr. Freed: That is correct, your Honor.

Secondly, the joint venture may well throttle the Western development of sodium chlorate competition by Olin because in the 1958 Whither Report, which is Plaintiff's Exhibit 15, under Section 9, the Chemicals Division there discussed how most of its activities had been concentrated in the South and how it looked forward to an expansion into Mid-West and Far West chemical operations——

The Court: Now, is this on the assumption that Olin would have built its own plant, or is this on the assumption that Olin would have purchased from others and competed as a selling instrumentality on the West Coast?

Mr. Freed: I think the assumption in the report was that Olin would become a producer and seller of products in the Mid-West and Far West.

Third, Olin was on the verge of entering into a contract with Vickers-Krebs on exploration and development of a prototype cell at the time of the joint venture, and as to that contract, as your Honor knows from finding 33, the negotiations were suddenly broken off in early 1960 when, according to Dr. Wojcik, some complications arose.

Finally, we know from the reports of Olin in 1960, from

findings 36 and 64.4, that Olin could have and in all likelihood would have tied its sodium chlorate plant to the [fol. 874] chlorine-caustic plant in the Chattanooga area, because it did in fact go ahead, as the findings 64.4 and 64.5 indicate, it did go ahead and build that portion of the Chattanooga operation which concerned chlorine and caustic soda but left out the sodium chlorate plant, only because of the joint venture with Pennsalt. But it is reasonably likely that Olin would have attached a sodium chlorate plant of its own to this other operation at Charleston, and this was the prediction of Olin's own Capital Appropriations Committee, according to the findings I have just cited.

The Court: Well, now, is that simply in furtherance of this view that the probabilities were that Olin would have gone into the manufacturing business on its own, absent the joint venture? It has no independent significance that would have attached to the chlorine-caustic plant at Chattanooga?

Mr. Freed: I believe not. As far as the loss to competition from Olin it was principally in this platinized titanium anode.

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[fol. 875] The Court: Before I hear you, perhaps you can answer this, Mr. Freed. It is in the briefs I know, but what was the purpose of the contract between Olin and AmPot for 14,000 tons of sodium——

Mr. Freed: For sodium chlorate in 1960?

The Court: 1961.

Mr. Freed: I believe that the purpose of the AmPot contract was to supplement the supply of sodium chlorate available from Pennsalt to enable Olin to make sales on behalf of Penn-Olin before the Penn-Olin plant went into production. It was a supplemental supply contract.

The Court: You agree?

Mr. DeLone: Yes. That is an accurate statement.

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[fol. 876] Mr. Freed: We believe that the Chemicals Division of Olin Mathieson must be considered as Olin itself for the purposes of this case.

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[fol. 877] The Court: Let me ask you: If I should come [fol. 878] to the conclusion that as a mater of reasonable probability, absent the joint venture, Olin would have constructed a factory and sold its products in the southeast, if I should come to that conclusion, does the Government contend that from that the Government must follow, the Government must win?

Mr. Freed: Yes.

The Court: Let me ask you: Isn't there a further question as to whether or not the construction of a plant by Olin, sales of products by Olin in the southeast, would have produced a more competitive situation than did the joint venture?

Mr. Freed: No, your Honor, that would not be a legitimate question. It is not for the Government and it is not for the courts to weight the advantages of combinations of competitors and what they give to the economy, and what individual companies give to the economy. The antitrust laws do not stand as a judge of what is best for the country.

The only thing which we urge is that competition determine the health and the vigor of the economy on this basis in this business.

The Court: I recognize that as between Pennsalt, and under the hypothesized situation, that there would be entry by Olin, that the joint venture has eliminated competition which otherwise would have existed between Pennsalt [fol. 879] and Olin. I recognize that. But doesn't the Clayton Act require something more, that the acquisition of assets probably will be to substantially lessen competition?

Mr. Freed: That is correct, your Honor. There is a distinction between limiting our intention solely to the merging companies and looking at the industry as a whole.

The Court: I have in mind that distinction, but I want to just press a little on the necessity of showing a substantial lessening of competition, assuming that I should find

that Olin would have entered independently in the absence of the joint venture. That is the assumption I am making at this point.

Is it not conceivable, as a matter of theory, that there would have been more and tougher competition under the joint venture than there might have been if Olin had built a plant in the east itself?

Mr. Freed: I think we certainly can assume, your Honor, that if two or three or ten companies, great industrial corporations, combine to form any new plant that they may thereby provide much greater competition for the other people in the industry than existed before. It is for this reason, because we do not permit combinations which restrain trade among the members, and——

The Court: I thought you agreed that wasn't the cri- [fol. 880] terion, that that was one consideration but you had to look at the entire competitive situation.

Mr. Freed: That is correct, your Honor.

If we take the following hypothetical, we are dealing here with a case in which Pennsalt and Olin combined to form a new plant, the defendants arguments offer very little distinction between that situation and a joint venture which would have consisted of Pennsalt, Olin, Pittsburgh Plate Glass, Solvay, Wyandotte, and Virginia Smelting.

If all six of them got together and formed the joint plant it would be far more vigorous than Penn-Olin, your Honor, and it would be equally violative of the anti-trust laws if these companies were potential competitors.

The Court: What you have done is would have eliminated competition between the number of companies here. The real question would be how much competition had really been eliminated between Pennsalt and Olin if Olin had built a plant.

You have Pennsalt with a plant out in Oregon doing no business in Florida, and you have Olin Mathieson, under our hypothesis, doing business in Florida.

Now, it seems to me you would have to compare that competitive situation with the competitive situation which would exist if you had your joint venture, namely, both [fol. 881] Pennsalt and Olin together directing their shots

at the southeastern market from that more advantageous position.

Mr. Freed: As we view the industry, your Honor, and I think this will answer your question, prior to Penn-Olin there were three independent competitors in this business; Pennsalt with one plant which sold nation-wide: Hooker had two plants, one of which sold in the east, one of which sold east and west; AmPot had two plants, one which sold only in the east, one in the west that sold substantially in the east. Three independent companies.

We believe that the evidence establishes that Olin would have been a fourth brand new comer into this industry.

What is the difference between Olin and Pennsalt plus Olin? It is this: If Olin had come into this industry alone it would have been under no inhibitions, practical, legal, or otherwise, from selling its products through the United States. Under that circumstance it would have competed with all of the eastern producers, with Pennsalt sales in the east, and out on the West Coast, which we know from the evidence was in great need of more competition; and Pennsalt would not have been inhibited from selling in the east.

In other words, this joint venture by two companies going in it instead of one resulted in dividing the market between Pennsalt and Olin rather than introducing a fourth [fol. 882] newcomer.

The Court: What you are now arguing is that the result of the joinder as against the alternative of a plant by Olin as against that alternative the joinder did result in a substantial lessening of competition.

Mr. Freed: Yes.

The Court: Very well. Now, suppose you come to the opposite conclusion, that is, that it didn't, then would a determination that Olin would have built a plant require a judgment in the Government's favor?

I probably haven't stated it very clearly to you.

What I am doing is saying you have argued to me, as I understand it, you have contrasted two situations, one, no joint venture, with Olin going into the market as a manufacturer in the southeast with the joint venture situation, and you have argued that the joint venture situation did substantially lessen competition—reasonably likely that it would have lessened competition, as against that which

would have prevailed if there had been no joint venture and Olin came in. That is what you argue.

Mr. Freed: Yes, your Honor.

The Court: Now I am saying suppose I should disagree with that argument and say that competition would not have been substantially lessened under the facts we have [fol. 883] hypothesized, namely, the entry of Olin and the elimination of the joint venture. I am saying suppose I came to the conclusion that competition wouldn't have been lessened, it was not, there would not have been a great deal of competition by Olin alone, that is, by Olin and Pennsalt together, then you say the Government is entitled to a judgment?

Mr. Freed: That is right. I don't believe that your Honor, under all of the anti-trust decisions, I don't believe that you can weigh how vigorous the competitor Olin would be against how vigorous a competitor Penn-Olin would be.

The Court: Doesn't the law require you to do that?

Mr. Freed: No.

The Court: Can a combination be illegal unless it has that result?

Mr. Freed: The combination is illegal, your Honor, if two companies combine, and as a result of their combination there is a lessening of competition between them or with others. In either situation that ends the problem. There is no weighing of a third alternative in which you would say there may be a lessening between them and with others, but there would be more competition with joint venture.

That third creation is not relevant, and I cite to Your Honor several cases in which there have been creations of this sort. The foremost case is in the Supreme Court in [fol. 884] the Timkins case cited in our briefs, where American Timkin and British Timkin formed a brand new company, French Timkin, to exploit one of the markets. This was a brand new creation. The result of creating it was there was division of markets, a division of the places in which the companies would compete. In the Supreme Court decision it was stated that the fact there would be more profits to an American enterprise from the creation

of this joint company was no defense whatever, that as long as there was combination involved it was unlawful.

In the Minnesota Mining case we have the same situation, where the Americans contended they could not make nearly as much profit by individually competing in foreign countries as they could by setting up a brand new joint company, and the court held that the combination of these competing enterprises who are only potential competitors in that market in which the joint company was established that combination violated the anti-trust laws irrespective of weighing profitability.

The Court: I haven't injected the profit factor into my discussion; that is your injection, not mine.

Mr. Freed. I inject it, Your Honor, because the defendants interject it, and there is——

The Court: I am interjecting the substantially lessening of competition factor, not profits.

Mr. Freed: Just let me say that in the Minnesota Mining [fol. 885] case the court found it was not necessary for the Government to show how much commerce could be involved if there were no joint company.

The court said we may even speculate without this joint company abroad there will be little success by these Americans against foreign competition; nevertheless, the Sherman Act required that a combination of competitors be condemned and the weighing of relative profitability, relative success, the relative vigor of competition was not a concern for the court.

That is our contention here; that the anti-trust laws require competition, and even though that competition may in some cases result in the injury and disappearance of some companies, as, for example, in the case of price fixing.

Your Honor knows there have been a wealth of cases involving price fixing. It is unlawful, nevertheless it is frequently justified by businessmen and by economists in situations in which without fixing a minimum price some businessmen may find that they cannot maintain a margin of profit and would have to go out of business. The making of the agreement in a sense helps the health of those companies. That is not a relevant consideration under the anti-trust laws. The combination of competitors is forbidden.

The Court: In other words, the effect of such an ac-
[fol. 886] quisition may be substantial lessening of competition, it has to be read out of the Act?

Mr. Freed: No, Your Honor. So long as the Government shows that there has been a lessening of competition in any of the areas that we have focused on today. The court must find the venture unlawful even though you would find that the venture had some advantages in other areas of consideration. It might be more vigorous in——

The Court: The Bethlehem case, we are talking about geographical areas when it created more competitive situations in some, and less competitive situations in others?

Mr. Freed: That is correct, Your Honor.

[fol. 887] The Court: What I am talking about is whether or not the broad picture of competition in a given area isn't the criterion.

Mr. Freed: That would be the criterion if an individual company were involved, but so long as there is a combination and so long as that combination substantially lessens or restrains trade in any area that you focus on, I do not think that the Court is called upon or permitted to weigh that lessening against an increase of another sort.

The Court: Well, doesn't the American Sugar Refining case say just the opposite?

Mr. Freed: I don't believe so, your Honor.

The Court: American Crystal Sugar Company case, page 33 of the Defendants' brief.

Mr. Freed: I don't believe that a full reading of the American Crystal Sugar case will so indicate.

The Court: Very well. You have clarified for me the Government's position on it and have been very helpful.

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[fol. 888] Mr. Freed: So what do we find happened to competition here? Mr. Connelly is correct. We did have the representative of AmPot and the representative of Hooker come and say that Penn-Olin's formation increased competition for them, made vigorous competition for them. This is always true. Every time a monopolist expands his hold on a market he makes it much tougher for the people who are left. This was precisely the holding of the Second Circuit in the Alcoa case, that the expansion of the monop-

oly position to meet new challenges and create new capacity —of course, it increased competition for everyone else. But that was not the test. It made it more difficult for the other people and it made it more difficult for newcomers. And in the Alcoa case it was a monopoly which was unlawful; in our case it is the combination which performed this unlawful act.

When an individual company builds a new plant, that also makes it difficult for competitors, but there is no [fol. 889] touchstone of anti-trust violation, there is no combination, contract, conspiracy or merger. But if there is a merger which violates the anti-trust laws because it substantially lessens competition, that merger may enable the merged companies to build one or a hundred new plants. It is irrelevant that it is tougher for the other people in industry. It is not the competition against them that counts; it is, What is the competition between the combining companies and what is the fairness? Can a combination fairly compete with individual entities? And the theory of our competitive system is that individual companies must make the decision to compete and make competition more vigorous.

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[fol. 890] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 1

Olin Mathieson Chemical Corporation
Industrial Chemicals Division

Research and Development Department

H-35.501 Electrochemical Survey Report
General Subject: H—Miscellaneous Inorganic Chemicals

Name	Res. Mgr.	Super.	Work By	Rep. By	Charge No. 63-1-743-100-6401
J. O. Logan (3)					
B. H. Wojcik					
B. H. Nicolaisen					Report Dated: July 18, 1955
W. C. Gardiner	X				
B. E. Hill		X			
(W. J. Sakowski)			X	X	Typed: October 14, 1955 (djp)
G. D. Byrkit					
R. E. Maizell					

Production of Sodium Chlorate

Approved By: Bruce E. Hill.
Date: 10/19/55.

Signed: W. J. Sakowski, BEH.

Date: 10/19/55.
BHW

[fol. 891] Summary

The increasing use of ClO_2 as a bleach in paper mills aroused new interest in the production of $NaClO_3$. W. W. Northgraves estimates Olin Mathieson Chemical Corporation's sales of 40 t/d with a potential increase as mills gradually convert to ClO_2 bleaching.

The investment is estimated to be about $3,000,000 for a 40 tons per day unit erected at an existing plant. The gross annual sales would be about $2,520,000.

Due to the wide range of values available on electrolytic power and graphite consumptions, two production cost estimates were made. The highest production cost estimated is $122.78 per ton while the most optimistic value is $97.06. The percent cash gain varies from 15 to 21% depending on the above production costs. Percent return on the investment varies from 8% to 15%, respectively. Pay-out times vary from 6.7 years to 4.7 years.

Since electrolytic power and graphite costs are 58 to 44% of the total production cost, it would be advisable to obtain these values in a pilot plant prior to entering into the production of $NaClO_3$. Therefore, it is recommended that a one cell pilot plant be constructed at Niagara Falls.

Objective

This survey was made to study the economics of electrolytic production of sodium chlorate.

Introduction

Due to the expanding use of ClO_2 for pulp bleaching, W. W. Northgraves suggested that Olin Mathieson Chemical Corporation should re-examine the possibility of producing sodium chlorate. In the past several evaluations of the process were made by R. B. MacMullin and Dr. W. C. Gardiner, each showing a small but satisfactory return on a 10 t/d scale, but the market did not appear secure for larger scale.

In his letter of December 12, 1954, W. W. Northgraves states that Olin Mathieson Chemical Corporation would be able to sell 40 tons per day to various paper mills using the Mathieson ClO_2 process. He also stated that the potential

sales may be even greater than anticipated because of a trend toward complete replacement of hypochlorite with ClO_2.

There are wide variations existing in the reported power and graphite consumptions for the production of sodium chlorate. Figures on consumptions obtained from J. Knox Davidson are higher than any other reported data. Therefore, two estimates have been prepared taking the most optimistic figures available. The actual operation of the plant is expected to be somewhere between these two extremes.

Bases for the Estimate

a. Investment

The investment is estimated to be about $3,000,000. This is based on the $3,500,000 investment reported for the 33 [fol. 892] tons per day plant erected by Oldbury Electro Chemical Company at Columbus, Mississippi. (Chem. and Eng. News, *32*, No. 45, p. 4464; 1954) The lower figure for this estimate is based on the fact that Olin Mathieson Chemical Corporation will build the sodium chlorate unit at the site of an existing plant. Thus, the majority of the nonmanufacturing facilities may be discounted. At McIntosh, such facilities accounted for about 22% of the total investment.

The investment was scaled-up from the 33 tons per day plant to a 40 tons per day plant by use of the six-tenths factor.

b. Raw Materials

The brine costs were assumed at $0.85 per ton for Saltville, Virginia. All other chemical costs were taken at list price in the O.P.D.R. Graphite for the electrodes was assumed at $0.30 per pound since some machining would be required.

Consumptions of brine and chemicals were based on data obtained from J. Knox Davidson. The consumption of graphite in Table I was based on data of J. Knox Davidson, whereas that in Table II was based on the most optimistic figure from Kirk and Othmer.

c. Utilities

Steam costs, water costs and power costs were based on values at Saltville. Steam and water consumptions were based on figures obtained from J. Knox Davidson. A. C. power consumption was based on figures taken from FIAT Report No. 752. D.C. power consumptions were based on figures from J. Knox Davidson, the higher value, and a more optimistic value from a letter to Dr. W. C. Gardiner from Mr. R. E. Gage dated June 13, 1950.

d. Operating Labor

The operating force consists of six men per shift with one day man or a total of 25 operating personnel. These personnel are required to operate the eight step sodium chlorate process.

1. Purifying Brine, (One man per shift included in the brine cost)
2. Electrolyzing, 2 men per shift
3. Cell Liquor, Purifying and Evaporating
4. Continuous Crystallizing
5. Centrifuging, 3 men per shift
6. Washing
7. Drying
8. Packaging, 1 man per shift with 1 day man

[fol. 893] References

Kirk and Othmer *3* (1949)
Trans. Elect. Chem. Soc. Vol. 92, 1947
Oil Paint and Drug Reporter
J. Knox Davidson Correspondence
Letter to J. O. Logan from W. W. Northgraves dated 12/2/54
Chem. and Eng. News *32* (1954)
Chem. Week Buyers Guide (1954)
Facts For Industry, Inorganic Chemicals and Gases Summary, p. 16, 1953
Facts For Industry, Inorganic Chemicals and Gases Summary, p. 6, 1955

Attachments

Table I	Production Cost Estimate; Sodium Chlorate Production; Based on J. Knox Davidson's Figures
Table II	Production Cost Estimate; Sodium Chlorate Production; Based on Most Optimistic Figures
Table III	Financial Criteria Sheet; Sodium Chlorate Production; Based on J. Knox Davidson's Figures
Table IV	Financial Criteria Sheet; Sodium Chlorate Production; Based on Most Optimistic Figures

[fol. 894]

Table I

H-35.501 (WJS)

PRODUCTION COST ESTIMATE

ESTIMATE NO. 1 PRODUCTION OF Sodium Chlorate SERVICE FACTOR 100%

BY WJSchonfeld PRODUCTION RATE 40 t/d

DATE 7/18/55 LOCATION Saltville, Virginia COSTS PER day (TERM) ton (UNIT)

INVESTMENT $3,000,000	UNIT	UNIT PRICE	UNITS PER TERM	UNIT CONSUMPTION	ITEM COST PER TERM	GROUP COST PER TERM $854.42	ITEM COST PER UNIT	GROUP COST PER UNIT $21.34
RAW MATERIALS								
NaCl brine	ton	0.83	24.3	0.604	$20.20		$.50	
	lb.	0.06	888	22.2	53.20		1.33	
$BaCl_2$	lb.	0.014	210	5.26	2.94		0.07	
Na_2CO_3	lb.	0.032	3110	77.7	99.50		2.48	
HCl	lb.	0.115	57.2	1.43	6.58		0.16	
$Na_2Cr_2O_7$								
graphite	lb.	0.30	2240	56	672.00		16.80	
						$2282.78		$57.10
UTILITIES								
FUEL	M	0.47	176	4.4	82.80		2.07	
STEAM	KWH	0.00676	304,000	7600	2055.00		51.40	
POWER, d.c.	M	0.07	184	4.6	12.88		.32	
WATER								
AIR							3.31	
Power, a.c.	KWH	0.00505	21,800	546	132.10			7.20
						288.00		
LABOR							7.20	
OPERATING	M.H.	$2.00	144		288.00			
MONTHLY								
OVERHEAD						288.00	4.80	7.20
REPAIR & MAINT.								
LABOR	M.H.	$2.00	96		192.00			
MATERIALS (12 mos 5 hrs/day)					96.00		2.40	
OVERHEAD 50%								
						82.20		2.00
SUPPLIES & MISC 1% inv./year						15.00		0.38
LABORATORY 1 chemist at $450/month								73.94
TRANSPORTATION								
TOTAL OPERATING COST						1098.40		27.50
DEVELOPMENT								
OVERHEAD							1.80	
DIRECT 25% Operating Labor					72.00		10.34	
INDIRECT 100% oper. labor + 1.5% inv./year					411.00		1.46	
INSURANCE 0.7% inv./year					58.40		13.90	
DEPRECIATION 6.6%/year					557.00			10.44
								122.78
TOTAL MANUFACTURING COST								
GENERAL EXPENSES								
TOTAL PRODUCTION COST								
CREDIT FOR BY-PRODUCTS								

BY WJSakowski PRODUCTION RATE 40 t/d SERVICE FACTOR 100

DATE 7/18/55 LOCATION Saltville, Virginia COSTS PER day (TERM) ton (UNIT)

INVESTMENT $3,000,000	UNIT	UNIT PRICE	UNITS PER TERM	UNIT CONSUMPTION	ITEM COST PER TERM	GROUP COST PER TERM	ITEM COST PER UNIT	GROUP COST PER UNIT
RAW MATERIALS						$854.42		$21.34
NaCl brine	ton	0.83	24.3	0.604	$20.20		$.50	
$BaCl_2$	lb.	0.06	888	22.2	53.20		1.33	
Na_2CO_3	lb.	0.014	210	5.26	2.94		0.07	
HCl	lb.	0.032	3110	77.7	99.50		2.48	
$Na_2Cr_2O_7$	lb.	0.115	57.2	1.43	6.58		0.16	
graphite	lb.	0.30	2240	56	672.00		16.80	
UTILITIES						$2282.78		$57.10
FUEL								
STEAM	M	0.47	176	4.4	82.80		2.07	
POWER, d.c.	KWH	0.00676	304,000	7600	2055.00		51.40	
WATER	M	0.07	184	4.6	12.88		.32	
AIR								
Power, a.c.	KWH	0.00605	21,800	546	132.10		3.31	
LABOR						288.00		7.20
OPERATING	M.H.	$2.00	144		288.00		7.20	
MONTHLY								
OVERHEAD								
REPAIR & MAINT.						288.00		7.20
LABOR (12 men 8 hrs/day)	M.H.	$2.00	96		192.00		4.80	
MATERIALS								
OVERHEAD 50%					96.00		2.40	
SUPPLIES & MISC. 1% inv./year						82.20		2.05
LABORATORY—1 chemist at $450/month						15.00		0.38
TRANSPORTATION								
TOTAL OPERATING COST								73.94
DEVELOPMENT								
OVERHEAD						1098.40		27.50
DIRECT 25% Operating Labor					72.00		1.80	
INDIRECT 100% oper. labor + 1.5% inv./year					411.00		10.34	
TAXES & INSURANCE 0.7% inv./year					58.40		1.46	
DEPRECIATION 6.67%/year					557.00		13.90	
MANUFACTURING COST								101.44
SHIPPING COST								122.78
CREDIT FOR BY-PRODUCTS								
NET PRODUCTION COST								

NOTES Sodium chlorate sells for $175/ton.

[fol. 895]

H-35.501 (WJS)

Table II

PRODUCTION COST ESTIMATE

ESTIMATE #1 2 PRODUCTION OF Sodium Chlorate

BY WJSchmidt PRODUCTION RATE 40 s/d SERVICE FACTOR 1.00

DATE 7/18/55 LOCATION Saltville, Virginia COSTS PER day (TERM) ; ton (UNIT)

ENVIRONMENT $3,000,000	UNIT	UNIT PRICE	UNITS PER TERM	UNIT CONSUMPTION	ITEM COST PER TERM	GROUP COST PER TERM	ITEM COST PER UNIT	GROUP COST PER UNIT
RAW MATERIALS						$422.42		$10.54
NaCl	ton	0.83	24.3	0.604	$20.20		$.50	
$BaCl_2$	lb.	0.06	888	22.2	53.20		1.33	
Na_2CO_3	lb.	0.014	210	5.26	2.94		0.07	
HCl	lb.	0.032	3110	77.7	99.50		2.48	
$Na_2Cr_2O_7$	lb.	0.115	57.2	1.43	6.58		0.16	
graphite	lb.	0.30	800	20	240.00		6.00	
UTILITIES						1687.78		42.18
Water	M	0.47	176	4.4	82.80		2.07	
Power, d.c.	KWH	0.00676	216,000	5400	1460.00		36.48	
Air	M	0.07	184	4.6	12.88		.32	
Power, a.c.	KWH	0.00606	21,800	546	132.10		3.31	
LABOR						288.00		7.20
OPERATING & SUPERVISORY	M.H.	$2.00	144		288.00			
REPAIR & MAINT.						288.00		7.20
LABOR (2 men 8 hrs/day)	M.H.	$2.00	96		192.00		4.80	
MATERIAL & OVERHEAD 50%					96.00		2.40	
SUPPLIES & MISC. 1% inv./year						82.20		2.06
LABORATORY 1 chemist at $450/month						15.00		0.38
TRANSPORTATION								
TOTAL OPERATING COST								59.02
DEVELOPMENT								
OVERHEAD						1098.40		27.50
PLANT 25% Operating Labor					72.00		1.80	
MAINTENANCE 100% oper. labor + 1.5% inv./year					411.00		10.34	
TAXES & INSURANCE 0.7% inv./year					58.40		1.46	
DEPRECIATION 6.67%/year					557.00		13.90	
MANUFACTURING COST								86.52
PRODUCTION COST								97.03

ESTIMATE NO. 2 PRODUCTION OF Sodium Chlorate

BY WJSchaefer, XI PRODUCTION RATE 40 T/D SERVICE FACTOR 100 %

DATE 7/18/55 LOCATION Saltville, Virginia COSTS PER day (TERM) ton (UNIT)

INVESTMENT $3,000,000	UNIT	UNIT PRICE	UNITS PER TERM	UNIT CONSUMPTION	ITEM COST PER TERM	GROUP COST PER TERM	ITEM COST PER UNIT	GROUP COST PER UNIT
RAW MATERIALS						$422.42		$10.54
NaCl	ton	0.83	24.3	0.604	$20.20		$.50	
$BaCl_2$	lb.	0.06	888	22.2	53.20		1.33	
Na_2CO_3	lb.	0.014	210	5.26	2.94		0.07	
HCl	lb.	0.032	3110	77.7	99.50		2.48	
$Na_2Cr_2O_7$	lb.	0.115	57.2	1.43	6.58		0.16	
graphite	lb.	0.30	800	20	240.00		6.00	
UTILITIES						1687.78		42.18
FUEL								
STEAM	M	0.47	176	4.4	82.80		2.07	
POWER, d.c.	KWH	0.00676	216,000	5400	1460.00		36.48	
WATER	M	0.07	184	4.6	12.88		.32	
AIR								
Power, a.c.	KWH	0.00606	21,800	546	132.10		3.31	
LABOR						288.00		7.20
OPERATING	M.H.	$2.00	144		288.00			
MONTHLY								
OVERHEAD								
REPAIR & MAINT.						288.00		7.20
LABOR 12 men 8 hrs/day	M.H.	$2.00	96		192.00		4.80	
MATERIALS								
OVERHEAD 50%					96.00		2.40	
SUPPLIES & MISC. 1% inv./year						82.20		2.06
LABORATORY 1 chemist at $450/month						15.00		0.38
TRANSPORTATION								
TOTAL OPERATING COST								59.02
DEVELOPMENT								
OVERHEAD						1098.40		27.50
DIRECT 25% Operating Labor					72.00		1.80	
INDIRECT 100% oper. labor + 1.5% inv./year					411.00		10.34	
TAXES & INSURANCE 0.7% inv./year					58.40		1.46	
DEPRECIATION 6.67%/year					557.00		13.90	
MANUFACTURING COST								86.52
PRODUCTION COST								97.05
CREDIT FOR BYPRODUCTS								
NET PRODUCTION COST								

NOTES Sodium chlorate sells for $175/ton.

Table III

Financial Criteria Sheet

Sodium Chlorate Production Based

on J. K. Davidson's Figures

1. Data:

a.	Estimated Plan Investment	$ 3,000,000.00
b.	Estimated Plant Capacity/year	12,400 tons
c.	Regular Depreciation Allowance	6.67%
d.	Emergency Depreciation Allowance	---
e.	Selling Price/ton	$175.00
f.	Cost of Brine/ton	0.83
g.	Production Cost (less Depreciation)	108.88

2. Profit and Loss Calculation:

a.	Estimated Gross Sales/year		$ 2,520,000.00
b.	Cash Cost of Production (Less Depreciation)	$ 1,570,000.00	
c.	Sales and Administration (10% of sales)	252,000.00	
d.	Gross Cash Profit		698,000.00

3. Tax Calculation:

a.	Gross Cash Profit		$ 698,000.00
b.	Depreciation, Regular	$ 200,000.00	
c.	Depreciation, Emergency	----	
d.	Taxable Income		498,000.00
e.	Tax, 50%	249,000.00	
f.	Net Income		249,000.00

4. Cash Throw-Off:

a.	Gross Cash Profit		$ 698,000.00
b.	Tax, 50%	$ 249,000.00	
c.	Net Cash Throw-Off		449,000.00
d.	Plant Cost	3,000,000.00	
e.	Cash Gain		449,000.00
f.	% Cash Gain		15%

5. Profit and Loss Ratio:

on J. K. Davidson's Figures

1. Data:

a. Estimated New Investment	$ 3,000,000.00
b. Estimated Plant Capacity/year	14,400 tons
c. Regular Depreciation Allowance	6.67%
d. Emergency Depreciation Allowance	---
e. Selling Price/ton	$175.00
f. Cost of Drums/ton	0.83
g. Production Cost (less Depreciation)	108.88

2. Profit and Loss Calculation:

a. Estimated Gross Sales/year		$ 2,520,000.00
b. Cash Cost of Production (less Depreciation)	$ 1,570,000.00	
c. Sales and Administration (10% of sales)	252,000.00	
d. Gross Cash Profit		698,000.00

3. Tax Calculation:

a. Gross Cash Profit		$ 698,000.00
b. Depreciation, Regular	$ 200,000.00	
c. Depreciation, Emergency	---	
d. Taxable Income		498,000.00
e. Tax, 50%	249,000.00	
f. Net Income		249,000.00

4. Cash Throw-Off:

a. Gross Cash Profit		$ 698,000.00
b. Tax, 50%	$ 249,000.00	
c. Net Cash Throw-Off		449,000.00
d. Plant Cost	3,000,000.00	
e. Cash Gain		449,000.00
f. % Cash Gain		15%

5. Profit and Loss Basis:

a. Cost of Plant	$ 3,000,000.00	
b. Gross Cash Profit		$ 698,000.00
c. Depreciation, Regular	200,000.00	
d. Depreciation, Emergency	---	
e. Tax, 50%	249,000.00	
f. Net Profit		249,000.00
g. Percent Return on Investment		8.3%
h. Payback Time, Years		6.7 years

Table IV

Financial Criterion Sheet

Sodium Chlorate Installation Based

on Most Optimistic Figures

1. Data:

a.	Estimated New Investment	$ 3,000,000.00
b.	Estimated Plant Capacity/year	14,400 tons
c.	Regular Depreciation	6.67%
d.	Emergency Depreciation	----
e.	Selling Price/ton	$175.00
f.	Cost of Brine/ton	0.85
g.	Production Cost (Less Depreciation)	83.51

2. Profit and Loss Calculation:

a.	Estimated Gross Sales/year		$ 2,520,000.00
b.	Cash Cost of Production (Less Depreciation)	$ 1,200,000.00	
c.	Sales and Administration (10% of sales)	252,000.00	
d.	Gross Cash Profit		1,068,000.00

3. Tax Calculation:

a.	Gross Cash Profit		$ 1,068,000.00
b.	Depreciation, Regular	$ 200,000.00	
c.	Depreciation, Emergency	----	
d.	Taxable Income		868,000.00
e.	Tax, 50%	434,000.00	
f.	Net Income		434,000.00

4. Cash Throw-Off:

a.	Gross Cash Profit		$ 1,068,000.00
b.	Tax, 50%	$ 434,000.00	
c.	Net Cash Throw-Off		634,000.00
d.	Plant Cost	3,000,000.00	
e.	Cash Gain		634,000.00
f.	% Cash Gain		21.1%

5. Profit and Loss Basis:

1. Data:

a. Estimated New Investment	$ 3,000,000.00
b. Estimated Plant Capacity/year	14,400 tons
c. Regular Depreciation	6.67%
d. Emergency Depreciation	----
e. Selling Price/ton	$175.00
f. Cost of Brine/ton	0.83
g. Production Cost (Less Depreciation)	83.51

2. Profit and Loss Calculation:

a. Estimated Gross Sales/year		$ 2,520,000.00
b. Cash Cost of Production (Less Depreciation)	$ 1,200,000.00	
c. Sales and Administration (10% of sales)	252,000.00	
d. Gross Cash Profit		1,068,000.00

3. Tax Calculation:

a. Gross Cash Profit		$ 1,068,000.00
b. Depreciation, Regular	$ 200,000.00	
c. Depreciation, Emergency	----	
d. Taxable Income		868,000.00
e. Tax, 50%	434,000.00	
f. Net Income		434,000.00

4. Cash Throw-Off:

a. Gross Cash Profit		$ 1,068,000.00
b. Tax, 50%	$ 434,000.00	
c. Net Cash Throw-Off		634,000.00
d. Plant Cost	3,000,000.00	
e. Cash Gain		634,000.00
f. % Cash Gain		21.1%

5. Profit and Loss Basis:

a. Cost of Plant	$ 3,000,000.00	
b. Gross Cash Profit		$ 1,068,000.00
c. Depreciation, Regular	200,000.00	
d. Depreciation, Emergency	----	
e. Tax, 50%	434,000.00	
f. Net Profit		434,000.00
g. Percent Return on Investment		14.5%
h. Pay-Out Time, Years		4.7 years

[fol. 898] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 2

Olin Mathieson Chemical Corporation
JOL File

Dr. B. H. Wojcik 1931 Baltimore
WWN:krr Baltimore

May 8, 1956
J. O. Logan
L. E. Russell

Sodium Chlorate—Market Survey—Pulp Industry

I am attaching a list of pulp mills, grouped by states, with estimated consumptions of sodium chlorate in tons per day for 1956 and 1959. Some figures are based upon fairly accurate knowledge of present ClO_2 production but many were obtained by peering into my crystal ball. I believe they are, if anything, conservative.

West Coast mills are not included. We could probably locate a plant to reach all mills listed.

No figure was available for consumption of chlorate as a weed killer, but annual production rate is given for 1953 and estimated for 1954.

Very truly yours, W. W. Northgraves, Technical Service attached.

Fla.	10.5
Ga.	17.5
N. C.	14
	42.0
	T./D.

The letter in parenthesis after the name of each mill indicates the type of ClO_2 process used or to be used.

Review for Brunswick and other locations.

40 T./D. or 10 T./D. pilot plant.

[fol. 899] Olin Mathieson Chemical Corporation

	1956	1959
Alabama		
Brewton—National Container (M?)	0	6
Coosa Pines—Coosa River Newsprint Co. (M)	0	2
Demopolis—Gulf States (M)	0	5
Mobile—I. P. Co (M?)	0	3.5
Naheola—Marathon (M?)	0	3
		19.5
Arkansas		
Crossett—Crossett (M)	2	2
Pine Bluff—I. P. Co (?)	0	4
		6
Florida		
Fernandina—Rayonier, Inc. (S)	1.5	1.5
Foley—Buckeye Cellulose (M)	3	6
Palatka—Hudson P & P (S)	0	3
		10.5
Georgia		
Brunswick—Brunswick P & P (S)	0	2
Jesup—Rayonier, Inc. (S)	5.5	10
St. Marys—St. Marys Kraft Corp. (S)	5.5	5.5
		17.5
Louisiana		
Bastrop—I. P. Co. (M)	2	3
Monroe—O.M.C.C. (M)	0	4
Springhill—I. P. Co. (M)	2	3
		10
Maine		
Great Works—Penobscot Chem. Fibre (M)	0	2
Lincoln—Eastern Corp. (?)	0	2
		4
Michigan		
Filer City—American Boxboard (S)	0	2
		2
Mississippi		
Moss Point—I. P. Co. (M)	2	3
Natchez—I. P. Co. (M)	15	7
		10
New York		
Ticonderoga—I. P. Co. (S)	1	1
		1
North Carolina		
Acme—Riegel Paper Corp. (S)	6	8
Canton—Champion P & F (M)	3	6
		14

[fol. 900] Olin Mathieson Chemical Corporation

	1956	1959
Pennsylvania		
Spring Grove—P. H. Glatfelter Co. (S)	3.5	4
Tyrone—West Virginia P & P (S)	0	2
		6
Texas		
Evadale—East Texas P & P (M)	3.5	4
Lufkin—Southland Paper Mills (S)	0	2
Pasadena—Champion P & F (M)	3	4
		10
Virginia		
Covington—West Virginia P & P (M)	3	4
Franklin—Camp Mfg. Co. (S)	4	4
		8
Wisconsin		
Nekoosa—Nekoosa-Edwards Paper Co. (S)	0	2
	52	120.5
O.M.C.C.—Niagara Falls, N. Y.	7	8
Total	59	128.5
Total for 350 day year	20,750	45,000

Phytocidal applications—no information
The following from Chemical Statistics Handbook, 1955 (MCA)

	1953	1954
Production	43,221	36,438*
Imports	962	
	44,183	

* Based upon 1st 6 months.

[fol. 901] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 3

Date: July 5, 1956.

Olin Mathieson Chemical Corporation

To: Dr. N. O. Stein at 460 Park Avenue
From: Russell Hopkinson at 460 Park Avenue

N. O. Stein.

Why should not Olin Mathieson Make:

1. Sodium chlorite (sod chlorate)
2. Ammonium perchlorate.

RH, Russell Hopkinson.

[fol. 902] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 4

Olin Mathieson Chemical Corporation

7/18/56.

Mr. R. Hopkinson, 460 Park Ave., N. Y.
J. O. Logan, Baltimore

D. W. Drummond
N. O. Stein—N. Y.
B. H. Wojcik

Chlorates and Perchlorates

Acknowledging your memo of July 13th, I think it is very timely that we should consider the subject. Actually, the Hooker-Oldbury merger has led me to feel we should take positive action on chlorates and I am undertaking certain negotiations which might lead to developments in this connection.

It is my understanding that the Aviation Division is currently doing work on perchlorates and by copy of this memo, I am asking Wojcik to review the perchlorate picture and indicate whether the Aviation Division work is pertinent

to our own interest, and if not, to advise the status of our own knowledge of perchlorate production.

As soon as we have a few more facts at hand, we will be in touch with you for review.

J. O. Logan.

[fol. 903] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 5

July 10, 1956.

Mr. R. Hopkinson (2), 460 Park Ave., N. Y. C.
N. O. Stein, 460 Park Ave., N. Y. C.

Chlorates Sodium Chlorate—Ammonium Perchlorate

This will remind you of our discussion on the train to New Haven on July 6 when I tried to answer the questions you raised in your memorandum to me of July 5, viz.; why should not OMCC make sodium chlorate and ammonium perchlorate?

We sell sodium chlorite products—trade names, Textone, C_2, Technical Grade, both in solid form and solutions. These chemicals were introduced by Mathieson to the chemical trade in the early 1940s.

We purchase sodium chlorate from our neighbors at Niagara Falls, Oldbury Electrochemical Company, and use it in the manufacture of our chlorites.

Ammonium perchlorate is made from sodium perchlorate which in turn is made from sodium chlorate in special electrolytic cells. We therefore have a good reason for getting into the sodium chlorate manufacturing business and this has been the subject of discussions on several previous occasions. You will remember that I told you of our obtaining the consulting services of an engineer familiar with this production who gave on a confidential basis information to Joe Baker and Dr. Gardiner at Niagara Falls regarding sodium chlorate production methods.

Mention was made of the predominance in the field of chlorate production of Oldbury and also that American Potash & Chemical Corporation recently acquired the facilities of Western Electrochemical Company at Henderson,

Nevada, near Boulder Dam, where large-scale production of chlorates is practiced. Oldbury has plants in Canada through their associated company, the Electric Reduction Company of Canada, which has recently built a large plant near Vancouver, B.C. and operates a plant at Buckingham, Quebec. Oldbury operates plants at Niagara Falls, New York and in Mississippi. Pennsalt is another manufacturer of chlorates.

N. O. Stein.

[fol. 904] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 6

Olin Mathieson Chemical Corporation

July 13, 1956.

Mr. J. O. Logan, Baltimore
Russell Hopkinson, 460 Park Ave., N. Y.

D. W. Drummond
N. O. Stein

Chlorates and Perchlorates

For many reasons it seems to me this company should be in the business of manufacturing chlorates and perchlorates. This matter was looked into several years ago and a certain amount of know-how developed at that time. Now that through our efforts the application of chlorine dioxide to pulp bleaching has reached such large proportions, it is all the more important that we get into this business.

Potentially large uses for the perchlorates are developing which makes the general picture still more interesting.

I notice today that Oldbury Electrochemical will be merged with Hooker and this may create an aggressive combination in this field. The subject therefore is an urgent one.

I believe we could assist you in reviewing this subject, which I would be glad to do at your convenience.

Russell Hopkinson.

[fol. 905] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 7

Olin Mathieson Chemical Corporation
Industrial Chemicals Division

Research and Development Department

H-35.502 Electrochemical Survey Report
General Subject: H—Miscellaneous Inorganic Chemicals

Name	Res. Mgr.	Super.	Work By	Rep. By
J. O. Logan (3)				
B. H. Wojcik				
B. H. Nicolaisen				
W. C. Gardiner	X	X		
A. J. Holmes			X	X
G. D. Byrkit				
R. E. Maizell				
S-R. C. Harshman				
S-T. H. Dexter				
S-C. M. White (Genesee)				

Charge No. 63-1-743-100-6207

Report Dated: July 26, 1956

Typed: August 2, 1956 (DP)

Production of Sodium Chlorate

Approved By: W. C. Gardiner.

Dated: 8/2/56.

Signed: A. J. Holmes, DJP.

Dated: 8/2/56.

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[fol. 907] I. Summary

The general position of the four U. S. sodium chlorate producers is discussed with special emphasis on Pennsylvania Salt Manufacturing Company.

Available technical details of the Oldbury, Western Electrochemical, International Minerals and Chemicals, Cardox, Dept. of Agriculture and the Olin Mathieson Chemical Corporation's Crushed Graphite Anode cells are discussed. No information on Penn Salt cells is available. Preliminary cost estimates were made on the basis of 40 tons of sodium chlorate per day for the three plants that had sufficient information available: Oldbury, U. S. Dept. of Agriculture and Crushed Graphite Anode Cell. Production costs were $126.47, $109.67 and $109.29 per ton of sodium chlorate respectively. The % Return would be 4.6, 9.5 and 8.1% on Investments of $3,000,000, $2,709,000 and $3,148,000 respectively. Pay Out Times were 8.9, 6.2 and 6.8 years respectively. There is doubt with respect to the basic information on each of these cells so that each should continue to receive consideration.

It is recommended that "know-how" be purchased from Penn Salt, Electro Reduction or other producers if immediate construction of a plant is required. If time for development is permitted, then evaluation of the three known cell designs should continue and detailed cost estimates of the chlorate recovery plant made.

[fol. 908] II. Objective

This survey was made to give an over-all picture of the sodium chlorate producers in the United States and to review our knowledge of electrolytic cells for the production of sodium chlorate.

III. Introduction

A previous Survey Report H-35.501 by W. J. Sakowski indicated that the use of the Oldbury cell as described by J. Knox Davidson might lead to marginal operation if operating costs were as high as Davidson stated. The possibility of using a cell of different design to minimize these operating costs was investigated and it was decided that a crushed graphite anode (CGA) cell be compared in performance to

the Davidson cell on a laboratory scale. The CGA cell compared favorably so work has continued on improving this cell. These two cells will be compared technologically and economically with the I.G. Farbenindustrie, Western Electrochemical, International Minerals, Cardox, and U. S. Department of Agriculture cells.

Special emphasis is given to the position of Pennsylvania Salt Manufacturing company in the domestic chlorate production picture. No information is available on their cell for comparison with the above cells.

Sodium chlorate is manufactured by four companies in the United States today; Oldbury Electrochemical at Niagara Falls, New York and Columbus, Mississippi; Western Electrochemical Corporation, a subsidiary of American Potash and Chemical Corporation, at Henderson, Nevada; Cardox at Claremore, Oklahoma; and Pennsylvania Salt Manufacturing Company, at Portland, Oregon. 1955 production of $NaClO_3$ was 46,600 tons. Western Electrochemical primarily manufactures potassium perchlorate from their chlorate while Cardox's output is relatively small, mainly captive. National production in 1954 was 37,800 tons of which Penn Salt made about 4%; 800 to 1200 tons.

IV. Pennsylvania Salt Manufacturing Company

A news item appearing in the July 1956 issue of "Chemical Engineering" and the May 22, 1956 issue of the "Journal of Commerce" states that Pennsylvania Salt Manufacturing Company has announced an improved electrolytic cell for making sodium chlorate. First installation of the new cells will be at the company's Portland, Oregon plant where a complete bank will be put into commercial operation by early 1957. Details of the improvement are being kept under wraps until the full-scale trial proves successful and its new patents issue.

An article in the November 1944 issue of "Chemical and Metallurgical Engineering" described the Penn Salt Chlorate plant at Portland, Oregon as follows:

Solar salt obtained from California is stored in tanks and later dissolved and pumped to a purification unit where [fol. 909] calcium and magnesium salts are precipitated in concrete tanks. This purified salt solution is fed to the elec-

trolysis cells. These cells operate in electrical series of 500-600 volts at 2000-3500 amperes. Current density in the cells is 74-185 amps./ft.^{2}. Mercury arc rectifiers are used for converting the A.C. power to D.C. The cells operate at 29-32°C. Cell liquors after electrolysis are clarified by filtration and fed to a two-stage evaporator for concentration, after which separation occurs in crystalizers with the sodium chlorate crystals passing to refining tanks for treatment. Final separation is obtained by use of batch centrifuges. The mother liquor is returned to the cell feed tanks for adjustment to final strength and volume. Drying of the crystals takes place in heated-air, rotary dryers from which the material passes to grinding, screening and packing operations, all of which are protected by dust control equipment.

In 1946 Penn Salt obtained a patent (2,628,935) for the electrolytic production of chlorates. Chlorine gas is used to acidify the cell liquor before it enters the cells, thus saving the cost of hydrochloric acid. It is believed that they may be using blow-off chlorine in this operation.

V. Chlorate Cells

Technical details of various cells for the electrolytic manufacture of chlorate are summarized below:

1. I. G. Farbenindustrie, Bitterfeld, Germany

A relatively complete description of the chlorate cells and plant are given in the FIAT Final Report No. 732. These cells operate at 8000-9000 amperes with 76 cells in series, each cell at 3.5 volts. The anodes are hollow magnetite, the cathodes of perforated steel. Cell temperatures are 60-75°C. with current efficiencies of 85-90%. Anode consumption is 3.5 lb./ton $NaClO_3$ produced. Power consumption is 6800 K.W.H. per ton $NaClO_3$. The cells operate on a continuous cascade cycle. This cell requires 50 sq. ft. of floor space per ton day. Magnetite for these cells is not available in this country.

2. Oldbury Electrochemical Company (from J. Knox Davidson, Consultant)

J. Knox Davidson was retained by Mathieson in 1952 as a consultant on chlorate manufacture. He was formerly a civil engineer with one of the companies affiliated with Oldbury Electrochemical Company. The operating characteristics of the cell that he gave Mathieson may be in error because he did not have a chemical background. He submitted a detailed drawing for a bipolar, 24 cell unit and a flow sheet for a complete chemical recovery plant. According to Davidson this cell would require 7600 K.W.H.-D.C. per ton $NaClO_3$ and 56 pounds of graphite/ton of $NaClO_3$. This cell operates at 50°C. at a 60-70% over-all current efficiency. [fol. 910] The cell and its electrolyte holding tank requires 230 sq. ft. of floor space per ton day. The operating characteristics of this cell seem very poor in comparison to values published for other cells. It is hard to believe that such a cell is operated so inefficiently by Oldbury who is the major producer of $NaClO_3$ in this country.

3. Cardox Corporation

An article appearing in the Transactions of the Electrochemical Society, Vol. 92, pg. 55-65, (1947) describes the chlorate cell used by Cardox Corporation at Claremore, Oklahoma. This cell has graphite bars for anodes and steel plates for cathodes. Graphite is consumed at a rate of 20 pounds per ton of $NaClO_3$ produced. Cell voltage is 3.1-3.5 volts at 1600 amperes. Current efficiency is 85-90%. The cell operates at 35°C., 5600 K.W.H. of d.c. electricity are required to make one ton of $NaClO_3$. Floor space required for cells to produce one ton per day is 42 sq. ft.

4. Western Electrochemical Corporation

An article appearing in "Chemical and Metallurgical Engineering", Vol. 51, pg. 108-9, 130-3, Dec. 1944 describes Western Electrochemical's chlorate cell. This cell operates with continuous feed and continuous product withdrawal. Anodes are made of graphite, cath-

odes of steel. Cell voltage is 3.0-3.5 volts at 2500 amperes, current efficiency is 75%. 6400 K.W.H. of d.c. electricity are required to make one ton of chlorate.

5. International Minerals and Chemical Corporation

This corporation's cell is described in an article appearing in Vol. 92 of the "Transactions of the Electrochemical Society", pg. 15-21, 1947. This cell produced only potassium chlorate but the same cell could be used to make the sodium compound. The anodes are impregnated graphite and the cathodes are perforated steel plates. Cell voltage is about 3 volts at 3,000 amperes. No values are available on the current efficiency, power or graphite consumption of this cell. This cell requires 100 sq. ft. of floor space to produce one ton per day of $NaClO_3$.

6. U. S. Department of Agriculture

This cell was developed by the Department of Agriculture and is therefore public information. A detailed description of this cell and its operation was described by McLaren in Vol. 79, "Transactions of the Electrochemical Society" pg. 93-109 (1941). This cell consists of a 2" diameter cylindrical graphite anode 2 ft. long surrounded by 10 cathodes made of ¼" diameter steel rods. This cell operates at 20-100 amperes at a voltage [fol. 911] of 2.8-3.9 volts. Power consumption is 4200-6000 KWH/ton of chlorate produced. Operating temperature is 40°C. with a current efficiency of 85-90%. Graphite consumption is 8-12 pounds per ton of chlorate made. This cell operates batchwise. It requires about 100 sq. ft. of floor space per ton day of chlorate.

7. Crushed Graphite Anode Cell (CGA)

Dr. W. C. Gardiner suggested the possible use of the German HCl electrolysis cell for the production of chlorates. This is a bipolar cell with a ribbed graphite cathode, a cloth diaphragm, and a crushed graphite anode. The crushed graphite that is consumed in the operation of this cell could be supplied at low cost from waste anodes from chlorine plants. From laboratory

studies, it is predicted that the CGA cell would operate at 2400 amperes with 4.3-5.0 volts per cell. Power consumption would be 6500-7800 K.W.H-d.c. per ton of sodium chlorate. The cell would operate at 45°C. with a current efficiency of 85-90%. HCl consumption in this cell would be low in comparison to other chlorate cells. Continuous rather than batch operation would be used with this cell. Approximately 100 sq. ft. of floor space per ton day would be required.

VI. Cost Estimation

Production cost estimates were made for 40 ton per day sodium chlorate at Saltville using the three cells on which sufficient information was available, namely, Oldbury, U. S. Department of Agriculture and the Crushed Graphite Anode.

1. Investment

The Oldbury plant at Columbus, Mississippi for 35 tons per day was reported to cost $3,500,000 including service buildings and another small chemical plant. It is assumed that the chlorate facilities only for a 40 ton plant would cost $3,000,000. We have recently estimated the cost of an Oldbury cell from the detailed drawings supplied by Davidson. The chlorate recovery plant was estimated as the difference between $3,00,000 and the cost of cells and this cost was assumed to be common to all types of cells. The other two types of cells were estimated. Comparative Cell Costs and Plant Investments are summarized as follows:

Type of Cell	Cost of Cells	Plant Investment
Oldbury	$ 440,000	$3,000,000
Crushed Graphite Anode	588,000	3,148,000
U.S. Dept. of Agriculture	149,000	2,709,000

[fol. 912] 2. Production Costs

Production costs have been estimated on the following assumptions:

	Oldbury	CGA	Dept. of Agriculture
Graphite—lb./ton	56	0	12
HCl—lb./ton	77.7	0	130
Electricity—KWH/ton	7600	6600	6000

All other costs are the same or proportional to plant investment. Details appear in Tables I, II and III. Financial Criteria have also been estimated in Tables IV, V and VI and the results are as follows:

	Oldbury	CGA	Dept. of Agriculture
Production Cost	$126.47/ton	$109.99/ton	$109.67/ton
Production Cost (Less Depreciation)	112.57/ton	95.69/ton	97.27/ton
% Return on Investment	4.6%	8.1%	9.5%
Pay-Out Time, Years	8.9 yrs.	6.8 yrs.	6.2 yrs.

VII. Discussion

1. Oldbury Cell

The Production Cost of sodium chlorate based on information from J. Knox Davidson is comparatively high. However, as was stated earlier in this report, Mr. Davidson was not sure of his operating numbers so there is a definite possibility that they may be in error. On the basis of information obtained from the literature it would seem highly probable that this cell could be operated much more efficiently than Davidson describes.

2. CGA Cell

The cost of this cell is based on a full-size cell built for HCl electrolysis this year. The production capacity was based on laboratory data but the optimum operating rate has not been determined. The high cell cost might be reduced by modifications of the present design because of chlorate production rather than HCl electrolysis. The relation between power cost and production rate has not been determined but consistent conditions were chosen for this estimate. The high cell voltage and the high cell cost are not in its favor. Fac- [fol. 913] tors in its favor are: little or no cost for crushed graphite, and very small consumption of hydrochloric acid.

3. U. S. Department of Agriculture Cell

A very complete description of this cell and its operation is reported in the literature as previously cited. Although this cell is small, 40-150 amperes/cell, it reportedly operates very efficiently with a low rate of graphite consumption. A 40 ton per day plant would require 17,000 cells. Design work would be necessary to adapt these cells to a production type unit. The cost of a cell was estimated from the description given in the literature.

Techniques obtained in operating the CGA cell in the laboratory may possibly be applied to the U. S. Department of Agriculture cell to cut down on the amount of acid required, thus reducing the production cost of the chlorate.

[fol. 914] VIII. Conclusions

1. Sodium chlorate is produced in the U. S. by Oldbury Electrochemical, Western Electrochemical, Pennsylvania Salt and Cardox. International Minerals made potassium chlorate during World War II.

2. We have design information on three cells, Oldbury, U.S. Department of Agriculture and one under development in our laboratory called the Crushed Graphite Anode Cell (CGA).

3. The Oldbury cell is intermediate with respect to Investment and highest in Production Cost.

4. The U.S. Department of Agriculture cell is cheapest to build and practically the same as the CGA cell to operate. The Return on Investment and Pay Out Time are best for this cell.

5. The CGA cell costs more to build and about the same to operate as the U.S. Department of Agriculture cell.

6. There is doubt with respect to the basic information on each of these cells so that each should continue to receive consideration.

[fol. 915] IX. Recommendations

1. Laboratory work should continue on evaluation of the CGA cell.

2. Engineering studies should be made on designing commercial cells based on the U.S. Department of Agriculture unit cell.

3. Continue to evaluate available cell designs. Test of one or more prototype cells in a pilot plant would probably be part of this program.

4. Engineering studies should be made on the chlorate recovery part of the plant.

5. Two alternatives must be considered if immediate commercialization is desired:

a. *Buy "know-how"—*

Pennsylvania Salt Manufacturing Company should be approached first because of present relationship and because of their west coast location.
Electro Reduction Company of Canada might sell their process since Oldbury will probably merge with Hooker.

b. *Eliminate pilot plant work and engineer a plant from present information*

The major portion of the capital investment is tied up in chlorate recovery and electrical equipment. At a capacity of 40 tons of chlorate per day, the electrolytic cells represent from $150,000 to $600,000 of the total investment, depending on the type of cell chosen. It would be possible to design and build immediately a plant using one or several types of cell, recognizing the possibility that major cell design revisions might have to be made. Cost involved in such a change might mount to $250,000. This would represent only the amount which would otherwise have been spent on pilot plant work.

If this course of action were adopted, the U. S. Department of Agriculture cell would be the logical choice for the major portion of the cell installation because of its lower predicted capitalization.

[fol. 916] X. Attachments

Table I Manufacturing Cost Estimate, Sodium Chlorate in Oldbury Cells.

Table II Manufacturing Cost Estimate, Sodium Chlorate in CGA Cell.

Table III Manufacturing Cost Estimate, Sodium Chlorate in Dept. of Agriculture Cells.

Table IV Financial Criteria Sheet—Sodium Chlorate Production in Oldbury Cells.

Table V Financial Criteria Sheet—Sodium Chlorate Production in Crushed Graphite Anode (CGA) Cells.

Table VI Financial Criteria Sheet—Sodium Chlorate Production in U.S. Dept. of Agriculture Cells.

[fol. 917] IN UNITED STATES DISTRICT COURT

PLAINTIFFS' EXHIBIT 8

Olin Mathieson Chemical Corporation
Industrial Chemicals Division

Research and Development Department

H-35.503 Electrochemical Survey Report
General Subject: H—Miscellaneous Inorganic Chemicals

Name	Res. Mgr.	Super.	Work By	Rep. By	Chg. No. 63-1-743-100-2011
B. H. Wojcik					
B. H. Nicolaisen					Report Dated: 10/12/56
W. C. Gardiner	X	X			
A. J. Holmes			X	X	
R. A. Turner					
G. D. Byrkit					
R. E. Maizell					
S-R. C. Harshman					
S-T. H. Dexter					
S-C. M. White					
S-B. H. Wojcik					
S-R. M. Thomas					
S-G. K. Weisse					

Chemical Production of Sodium Chlorate from Chlorine and Caustic

Approved By: W. C. Gardiner. Signed: A. J. Holmes

Date: 4/1/57. Date: 3/27/57.

BTM

Received April 4, 1957, B. H. Wojcik.

[fol. 918] Table of Contents

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VII.	Recommendations	5

Attachments

Table I, II, III, and IV

Figure 1, 2, 3, 4, 5, and 6

[fol. 919] I. Summary

The investment for a chemical chlorate plant using caustic and chlorine for raw materials would be $600,000. Return on Investment for an E-8 mercury cell plant converted to the production of sodium chlorate would be 3.3%. Increasing the load on the McIntosh cells from 33,000 to 41,000 amps would produce enough additional caustic and chlorine to make 40 tons of sodium chlorate per day. A capital expenditure of $1,500,000 would be needed to make this change. Return on this Investment would be 23% with a Pay-Out Time of 3.4 years.

[fol. 920] II. Objective

This survey was made to determine the economics of making sodium chlorate from chlorine and caustic produced in an E-8 mercury cell plant.

III. Introduction

Survey Reports H-35.502 and H-35.504 by A. J. Holmes discussed several electrolytic cells and recovery processes for the production of sodium chlorate. Cost estimates of plants utilizing these cells were made. The question arose as to the possibility of economically making sodium chlorate chemically by combining chlorine and caustic soda.

IV. Technical Aspects of Chemical Chlorate Manufacture

The chemical reaction involved in making sodium chlorate from caustic and chlorine is: $3Cl_2 + 6NaOH \rightarrow NaClO_3 + 5NaCl + 3\ H_2O$. A typical process using this reaction was designed as a basis for determining the cost of such a plant.

Hot wet chlorine gas in introduced into a ceramic tower countercurrent to hot 50% caustic solution. The heat of reaction of these two materials evaporates about 62% of the water in the system. The salt formed from the reaction is not completely soluble in the remaining water so about 86% of the sodium chloride formed is precipitated and removed by a filter following the reaction step. The remaining water is removed by evaporation in a recirculating stream. Judicius evaporation and cooling result in the separation of sodium chloride and chlorate as crystals on separate filters.

The sodium chlorate is then washed, dried and stored for shipment in tank cars. The sodium chloride is returned to the mercury cell plant. Figure 1 is a flow diagram of the process. Figure 2 is the sodium chloride, sodium chlorate solubility curve. Table I is the list of chlorate plant equipment required, including size, cost, and materials of construction.

V. Economic Aspects of Chemical Chlorate Manufacture

Cost estimates for making sodium chlorate chemically have been made for converting the McIntosh, Alabama plant to a chlorate plant. A second chemical chlorate production cost estimate was made in which the electrical load on the existing E-8 cells was raised from 33,000 to 41,000 amperes. The additional caustic and chlorine that would be made at this higher current would be used to make sodium chlorate. It has been proven experimentally that the E-8 cell is capable of operating at 43,000 amperes. The current would be increased from 33,000 to 41,000 amps if an additional mercury arc rectifier were added to the existing system. Two 8000 amp rectifiers, one in each cell building, would provide enough additional current to make 40 tons of $NaClO_3$/day. The fact that the increased cell load would increase the amount of power consumed for all the caustic and chlorine produced in direct ratio of the increased cell voltage has been taken into consideration. This added cost has been included in the production cost of the sodium chlorate. The investment for such an installation would include $600,000 for the chlorate plant, and $900,000 for the [fol. 921] two 8000 ampere mercury arc rectifiers and auxiliary electrical equipment. Financial criterial sheets for all four approaches have been made. A summary of these results is given in Table II.

VI. Conclusions

1. The investment required for a chemical 40 Ton/day sodium chlorate plant would be $600,000.

2. Return on Investment of the McIntosh, Ala. plant would be 3.3% if it were converted to the production of sodium chlorate. The present day construction costs for a new mercury cell plant without liquid chlorine and caustic

handling facilities would be greater than the original McIntosh plant investment thus giving a lower return on investment.

3. It would be uneconomical to use an E-8 mercury cell plant as they are now operated for the production of sodium chlorate.

4. Increasing the load on all the E-8 cells at McIntosh from 33,000 to 41,000 amperes would produce enough additional caustic and chlorine to make 40 tons of sodium chlorate per day.

5. The capital investment for increasing the load on the McIntosh plant would be $1,000,000. A total investment of $1,500,000 to include the chlorate plant would yield a 23% Return and a Pay-Out Time of 3.4 years.

6. The increased load on the McIntosh plant would in no way interfere with the present production of caustic and chlorine.

VII. Recommendations

1. The chemical chlorate process outlined in this report should be compared with the process given in H-35.506 for the manufacture of sodium chlorate from chlorine and soda ash. The most economical method of manufacture should be investigated on a laboratory scale and then be followed by a pilot plant investigation of the process.

2. An E-8 mercury cell plant should not be converted to a chlorate plant because of its poor economic advantage.

[fol. 922] Table II

Summary of Estimates

	Investment	% Return on Investment	Pay-Out Time, Years
Sodium Chlorate from McIntosh Caustic and Chlorine (65.7 T/day $NACIO_3$)	$12,500,000	3.3	10
Sodium Chlorate from added power on McIntosh Plant (40 T/day $NaClO_3$)	$ 1,500,000	23	3.4

[fol. 923] Table III

Financial Criteria Sheet

$NaClO_3$ from Caustic and Chlorine at McIntosh Plant

Investment	Existing Plant	$11,900,000
	$NaClO_3$ Plant	600,000
	Total	$12,500,000
Gross Sales (24,000 T/Yr $NaClO_3$ at $161.80/T)		3,880,000
Deduct		
Cost of Mfgr. ($118.11/T)		2,840,000
Selling and Administration (5% Sales)		194,000
		3,034,000
Gross Profit		846,000
Income Tax (52%)		440,000
Net Income After Taxes		406,000
Return on Investment		3.3%
Pay-Out Time, Years		10

[fol. 924] In United States District Court

Plaintiffs' Exhibit 9

November 20, 1956.

J. O. Logan, Baltimore.
B. H. Wojcik, Baltimore
La Societe D'Electrochimie D'Ugines Baltimore Visit—
E. M. Elchardus and J. Kraft

J. F. Newell
J. E. Baker
B. H. Nicolaisen
W. C. Gardiner
H. E. Boge
W. W. Northgraves

In your absence Messrs. Elchardus and Kraft of the above concern arranged for a visit to Baltimore, November 14. Upon their arrival I learned that they are going to be in the States for a period of about one month acquiring information on various processes of interest to Electrochimie. With us they wish to discuss the latest developments in the production of chlorite. The Agreement which our Company

has with theirs was mentioned and given as an excuse for the call. I further learned that they already have had sessions with American Cyanamid, Hercules and du Pont. Items noted below were discussed. In no case did they insist on obtaining detailed information. An exchange of general information pertaining to the subject occurred with the feeling prevailing that detailed data might be purchased.

Chlorite

Electrochimie is planning on expanding its present capacity for the manufacture of sodium chlorite from 50 tons a month to approximately 110 tons. Prior to designing a plant it was felt that perhaps O.M.C.C. could enlighten them on ways and means of reducing production costs. At the present time sodium peroxide is used in the production of the chlorite. Literature reports state we are using carbon for the reduction step, and it was their feeling such practice may reduce manufacturing costs considerably. I pointed out that although reduction with carbon is our current practice we may wish to modify our process to meet German competition. They were familiar with the German product but did not appreciate it is being imported into the States. We discussed briefly the addition of sodium nitrate to the chlorite for purposes of abating corrosion. This, they told me, was new to them. In addition, information was passed on concerning the use of chlorine dioxide repressing agents, as for example X-Tan-Assist. Reasons given them for wanting to change our process involved the color of our product and the concentration. At this point, they showed me a sample of their sodium chlorite which was in lump form but exceedingly light in color. Their product contains between 80 and 83 per cent of sodium chlorite, the remainder being water.

[fol. 925] They also asked for information on the use of sulphur dioxide for the generation of chlorine dioxide. The brochure which W. W. Northgraves uses for discussion with prospects requiring chlorine dioxide for pulp bleaching operations was discussed and a copy given to Elchardus. They told me that Degussa is manufacturing spray dried sodium chlorite.

They asked whether permission could be granted them to visit the plant at Niagara Falls. I arranged a meeting with Mr. Newell who has given them permission to see our plant Thursday, November 29.

Sodium Chlorate

They were surprised to learn that we are not producing sodium chlorate for the generation of chlorine dioxide. They asked how we could afford to install chlorine dioxide generators throughout the pulp industry and yet not sell them the chemicals needed for its production. Service to customers of ours that use other products of Olin Mathieson's was given as the reason. Electrochimie is the oldest producer of sodium chlorate in France. In answer to my question concerning passing detailed information on to Olin Mathieson for chlorate production, they replied it was available for sale. I was told there is no serious problem concerning corrosion of the cell or the anodes. Some of the original cells built approximately thirty years ago are still in service and good carbon anodes will last from two to four years.

The chlorate cells are being operated at 16,000 amps although sufficient flexibility is available so that the amperage can be lowered to 1,000 if desirable. They stated that consideration had been given to building a new chlorate plant in France, but Electrochimie hesitates to go ahead with construction because the pay-out time is poor on new equipment. It is only because their plant has been capitalized that they are able to show a reasonably good return on the production of the chlorate. In the event we are interested to explore further the possibility of exchanging detailed information on chlorate production with Electrochimie, we should contact the manager of the division whose name is Terestchenko.

HCL Conversion to Chlorine

Since they had mentioned the contact with Hercules regarding the conversion of HCl to chlorine, I queried them concerning their thoughts on how this reaction might most economically be carried out. Mr. Kraft did not hesitate to say that if they had to move immediately on the conversion

of HCl to chlorine they most likely would consider the West Vaco process involving the use of copper chloride. They have not considered seriously the electrolysis of HCl in accordance with the German practice simply because they [fol. 926] have been told that the graphite consumption per ton of chlorine produced is abnormally high. I suggested that when they visit our Niagara Falls plant this subject be discussed in greater detail with our Dr. W. C. Gardiner.

Organic Chemicals

Electrochimie is expanding its interests in the manufacture of organic chemicals. They discussed in detail the conversion of pentane to hexachlorocyclopentadiene and the chlorination of butane to hexachlorobutadiene. They know these products are being made by Hooker. Kraft stated Electrochimie has developed a new and simpler process for the production of the chlorides. Offhand, I could not see much of an improvement over what is being done by Hooker.

The production of chlorinated paraffins was also discussed. I was told that they are plagued with color and instability problems on chlorinated paraffin. Based on my past experience I indicated that it was necessary to use high grade paraffin and an elevated temperature for chlorination plus pure chlorine in a glass-lined vessel for the production of a high grade product.

Continuous Sodium Hypochlorite Production

I was handed a brochure which outlined in some detail a simple unit developed by Electrochimie for the production of sodium hypochlorite continuously. They had received from one of our competitors an O.M.C.C. brochure on the same subject. The only point that appeared to be of real interest to them was the use of the pH control unit. This I stated was desirable since without it good control could not be achieved.

Toward the end of our meeting I indicated that perhaps the Agreement we have between the two companies might not be permitted to continue since it may be considered as a violation of anti-trust laws. This they were not surprised to learn.

In conclusion I asked whether they could leave with me

an official list of the products being manufactured by Electrochimie. No such list was available. However, some of the products being made are:

Inorganic—

HCN, NaCN, $Zu(CN)_2$, SCNNH, Na_2O_2, H_2O_2, $NaClO_3$, $KClO_3$, $NaClO_2$, Cl_2, NaOH, F_2, HF, BF_3AlF_3, Ca, Na, Vanadium

[fol. 927] Organic:

Chlorinated Paraffin, Chlorobenzene, Chlorinated Diphenyl, Vinyl Chloride (Monomer, Acrylates, Chloral, DDT, Carbon Tetrachloride, Perchloroethylene, Methacrylates

These men were delighted with the way we received them and are looking forward to visiting our plant at Niagara Falls. I would like to recommend that, if W. W. Northgraves' schedule permits him to be in Niagara Falls on November 29, he should attend the meeting in J. Baker's office.

B. H. Wojcik

BHW:feg

[fol. 928] IN UNITED STATES DISTRICT COURT

PLAINTIFFS' EXHIBIT 10

Market Research Report
Sodium Chlorate

December 1956

Prepared By: J. J. Hayes.
Approved: B. M. Schrauf.
Copy No.: 10.

[fol. 929] Sodium Chlorate

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[fol. 931] Recommendations

1. The Industrial Chemicals Division should initiate immediately an engineering project aimed at:

a) developing realistic production and investment costs for chlorate plant with capacity between 10-15,000 tons/year, location of operation to be most profitable should be in southeastern section of the United States.

b) determining plant pay-out time with freight equalization being based on a sales distribution pattern involving companies utilizing the OMCC process and now purchasing other OMCC chemicals.

2. The Sales Development Department should contact Cardox Corporation in order to evaluate: the economics of Cardox cell and process; possible purchase and transfer of the equipment if feasible (may be government owned); possible contract for marketing output, if Cardox would operate plant.

3. Render a decision as to the merits of this project only after the above recommendations have been carried out.

Conclusions

1. There should be adequate sodium chlorate production capacity to supply 1959 requirements if existing, plus planned expansions, are operated at 100% of rated capacity, (1959 capacity, 92,000 tons versus requirements—83,000 tons).

2. However, if Cardox plant, currently shut down, is not reactivated, then capacity in 1959 will be slightly below demand (77,000 tons versus 83,000 tons estimated requirements).

3. Regardless of the capacity—requirements balance in 1959, OMCC should not turn down the proposal to manufacture and sell chlorate if a favorable return on investment can be realized.

4. In view of the chlorate-chlorine dioxide generating process developed by OMCC (which is licensed royalty free to the pulp industry) it would not seem unreasonable to

expect many licensees to reciprocate by purchasing chlorate from OMCC.

5. In promotion of the Solvay generating process, Allied has been marketing American Potash chlorate currently being produced in Nevada; it may continue to do same with output from American Potash's new plant in Southeast, thereby continuing a rivalry for pulp trade sales.

[fol. 932] 6. There is sufficient cause and justification from this market study, and the OMCC sales picture to propose that the company engage itself in analyzing closely the economics of producing and marketing this product.

7. It is not too late to move into this field, but time for a desicision is waning.

[fol. 933] Summary

1. Sodium chlorate production in U. S. has increased since 1947 at a rate equivalent to about 11% per year; from an output of 20,000 tons in 1947, to an estimated 53,000 in 1956 and to a projected figure of 83,000 tons in 1959. (See Fig. 2)

2. Increased production is directly related to the expanding requirements of the pulp industry which utilizes chlorate as a source of chlorine dioxide for bleaching; this application alone will consume in the vicinity of 48,000 tons of chlorate in 1959, or just about double the 1956 requirement.

3. Four companies (Oldbury, American Potash, Penn Salt & Cardox Corporation) have combined capacity of 72,000 tons as of December 1956.

4. While rated capacity far exceeded output in 1956, production level did not surpass 52,000 tons due in part to Cardox plant (15,000 ton/year) being shut down since March. Reasons for shutdown have not been ascertained.

5. Regardless of the available Cardox capacity, Oldbury and American Potash plan to install additional capacity of 5,000 and 15,000 tons respectively, raising total U. S. capacity by 1959 to about 92,000 tons.

6. U. S. producers can not look to Canada as an export market because that country will have two plants in operation by late 1957, one in Quebec the other in British Columbia.

7. Pulp application is only application influencing the use-pattern as data below indicate:

	Short Tons	
	1956	1959
Pulp Bleaching	22,200	48,000
Herbicidal Applications	19,730	20,000
All Other	11,270	14,000
	53,200	82,000

8. Geographic market distribution will find southeastern U. S. the heavy consuming area by 1959 with 27,200 tons; northeast areas second with 21,500 tons; and south central third with 14,800 tons. (See Fig. 3)

9. Oldbury and American Potash will have combined capacity of 37,000 tons in southeast and south central areas by 1959 which will be slightly under the estimated requirements of 42,000 tons. (Cardox capacity has not been included.)

[fol. 934] I. Introduction

For years Mathieson Alkali had promoted the bleaching of pulp, textiles, fats and oils via chlorine dioxide generated from sodium chlorite. None of these applications ever developed into sizable markets for chlorite because of the high cost of chlorine dioxide. About 1948 it was revealed that chlorine dioxide could be economically generated from sodium chlorate directly and at a price which would be especially attractive to the pulp industry. The merits of using chlorine dioxide in a final stage bleach to improve brightness had already been established, all that was needed was cheaper priced chlorine dioxide. Sodium chlorate was the answer to this problem.

Allied Chemical and Mathieson both developed generating processes for producing chlorine dioxide from chlorate. Merits of each will not be discussed, as they have no bearing on the market picture itself. However, it must be emphasized that the Mathieson and Allied development is the prime factor in the growth of chlorate since 1952. Both herbicidal and miscellaneous tonnage has remained fairly constant during this period.

Except for military applications, sodium chlorate was

never considered an important basic chemical. Its major commercial market was confined to herbicidal applications until the advent of pulp bleaching. In 1952 herbicidal use represented 52% of 40,000 tons produced; bleaching about 2.5% and military uses the balance. For 1956, it is estimated that of 52,000 tons production only 37% will be consumed in herbicidal uses, but pulp consumption will be up to 42%; quite an interesting highlight in comparison with 1952.

In rounding out the market picture on sodium chlorate, it was deemed advisable to include whatever information was available on potassium chlorate and perchlorates, because of the intertwining process relationships of these products and also their similar chemical properties and applications.

II. Processes

A. Sodium or Potassium Chlorate

There are two methods by which chlorate can be manufactured, one—an indirect chemical process: and the other—a direct electrolytic method. Whereas the chemical reactions in both processes are fundamentally of the same type, the means by which they are affected are different.

The fundamental reactions that occur in both processes can be described as follows:

a) Reaction of chlorine with caustic soda and water

$$2\,Cl_2 + 2\,NaOH \rightarrow NaOCl + HOCl + NaCl + HCl$$

b) Reaction of hypochlorous acid with hypochlorite upon standing

$$NaOCl + 2\,HOCl \rightarrow NaClO_3 + 2\,HCl$$

The integrated process of making chlorates and perchlorates is illustrated clearly in Fig. 1.

[fol. 935] 1. Indirect Process (Chemical)

Alkali, usually hydrated lime, is treated with chlorine to form a hypochlorite solution, which is subsequently heated and acidified by the absorption of chlorine. Upon storage, the hypochlorite reacts with the hypochlorous acid present, thereby producing a solution of calcium chlorate contaminated with calcium chloride. Treatment of the calcium chlorate solution, with either sodium or potassium

chloride, produces the respective chlorate salt. Purity of the resulting chlorate is not as high as in the electrolytic process, nor is the production cost as favorable; capital outlay for equipment on other hand is lower.

This process is not used in the United States although Mathieson at Niagara once employed this basic synthesis to produce calcium chlorate which was utilized as an intermediate in manufacture of its sodium chlorite.

2. Direct Process (Electrolytic)

While either sodium or potassium chloride brine can be electrolyzed in a diaphragmless cell to produce the respective chlorate, potassium chlorate is generally not manufactured by such a process because of the product's low solubility in water which makes recovery from the cell difficult. It is better, according to reports, to form sodium chlorate by electrolysis and then effect a double decomposition reaction with potassium chloride to obtain potassium chlorate.

As for the electrolysis theory, chlorine liberated at the anode reacts with the hydroxide to produce hypochlorite and the chloride, also with the water to form hypochlorous and hydrochloric acids. By maintaining the electrolyte at pH 6-7, favorable conditions for the reaction between hypochlorite and hypochlorous acid can be reached. Because this reaction is slow, formation of chlorate is actually effected in the body of the cell rather than at the anode. Chlorate liquor from the cell is fed into a settling tank, from which it is purified and concentrated. Electrodes in chlorate cell are steel and graphite.

B. Perchlorates

1. *Sodium Perchlorate*—is manufactured solely as an intermediate for production of potassium, ammonium or other perchlorate salts; it has no commercial value because of its high degree of hydroscopicity. It is produced from sodium chloride liquor in an electrolytic cell, similar in construction to a chlorate cell except that the anode is constructed of platinum rather than graphite. Sodium perchlorate liquor so formed is subsequently reacted with sales such as potassium chloride, ammonium chloride, etc., depending upon what chlorate salt is desired.

[fol. 936] IN UNITED STATES DISTRICT COURT

PLAINTIFFS' EXHIBIT 11

Olin Mathieson Chemical Corporation
Industrial Chemicals Division

Research and Development Department

H-35.504 Electrochemical Survey Report
General Subject: H—Miscellaneous Inorganic Chemicals

Name	Res. Mgr.	Super.	Work By	Rep. By	
B. H. Wojcik					Chg. No. 63-1-743-100-2011
B. H. Nicolaisen					
W. C. Gardiner	X	X			
A. J. Holmes			X	X	Report Dated: 3/1/57
R. A. Turner					
G. D. Byrkit					Report Typed: 3/26/57 CB
R. E. Maizell					
S-R. C. Harshman					
S-T. H. Dexter					
S-C. M. White					
S-B. H. Wojcik					
S-G. K. Weisse					
S-R. M. Thomas					

Electrolytic Production of Sodium Chlorate at Saltville, Va., McIntosh, Ala., Lake Charles, La.

Approved: W. C. Gardiner. Date: 4/1/57.

Signed: A. J. Holmes. Date: 2/28/57.

[fol. 937] I. Summary

Investment and production cost estimates have been made for a 40 ton/day sodium chlorate plant at Saltville, Va., McIntosh, Ala., and Lake Charles, La. Three chlorate recovery processes employing evaporation, refrigeration, and isothermal sodium chloride addition have been estimated at each of the above locations. Sodium chlorate could be produced cheapest at Saltville by the isothermal salt addition process. The following is a summary of the information obtained for this report:

Cheapest Electrolytic Process

	Saltville	McIntosh	Lake Charles
Investment	$4,600,000	$4,600,000	$4,600,000
Production Cost, $/T	105.46	118.04	113.84
Return on Investment, %	7.6	6.4	7.0
Pay-out Time, Yrs	7.2	7.7	7.4

Investment and operating costs have been received from Pechiney of France and have been compared to the above figures. It is believed that the Pechiney estimate of investment is low for construction of such a plant in the U.S. ($2,570,000). Assuming that the Pechiney plant could be built for $4,600,000 it would give the best return of any of the electrolytic chlorate plants were it built at Saltville.

Investment	$4,600,000
Production Cost, $/T	100.38
Return on Investment	8%
Pay-Out Time	6.9%

[fol. 938] II. Objective

This survey was made to determine realistic production and investment costs for a 40 ton per day $NaClO_3$ plant to be located at one of Olin Mathieson's existing southern electrochemical plants.

III. Introduction

Saltville, Va., McIntosh, Ala., and Lake Charles, La. were considered as possible sites for a 40 ton/day electrolytic $NaClO_3$ plant. Actual accounting unit costs for labor, utilities, and raw materials were obtained from Mr. Newell's office for making these estimates.

A process and plant described by J. Grolee of Pechiney in

France was transmitted to Mr. R. S. Fodor of Olin Mathieson January 3, 1597. This transmittal contained unit consumptions of labor, utilities and raw materials as well as investment for a 40 ton per day sodium chlorate plant. The investment quoted for this plant was $2,573,000 which is the cost in dollars to build such a plant in France. It is believed that an additional $2,000,000 would be required to build such a plant in the U.S.

Various methods of chlorate recovery from cell liquor were investigated. They were: 1. Evaporation of cell liquor to crystallize NaCl and cooling of the resulting liquor to crystallize $NaClO_3$: 2. Refrigeration of cell liquor to crystallize $NaClO_3$; 3. Isothermal addition of NaCl to crystallize $NaClO_3$. Production costs and plant investment for these processes were made.

IV. Technical Aspects of $NaClO_3$ Plants

A. Cells

It is assumed for the purpose of this report that the electrolysis portion of the plant is the same in all cases considered. The cells are the bipolar type. They have hollow steel cathodes that are used as heat exchangers. The anodes are made from impregnated graphite so that the electrolyte will not soak through them to damage the contacting steel cathode. These anodes are not in frames but are separated from the cathode by a 1/8" thick gasket. Thirty of these cells are clamped together to make a unit. A 40 ton $NaClO_3$/day plant would consist of five of these units in series and ten in parallel requiring a D.C. power source of 18,800 amperes and 500 volts. It is assumed that these cells would operate at 80% current efficiency using 5800 KWH/ton $NaClO_3$. [fol. 939] Assuming the investment required for the Pechiney plant is $4,600,000, the production cost for sodium chlorate is $100.38/T giving a Return on Investment of 8% and a Pay-Out time of 6.9 years.

Financial Criteria sheets have been made and are given in Table I-X. A summary of these costs and investments is given in Table XII.

VII. Conclusions

1. Capital investment for an electrolytic 40 ton/day $NaClO_3$ plant is $4,600,000-$5,000,000.

2. Minimum production cost per ton of $NaClO_3$ is $103.71, maximum $123.99.

3. Maximum return on investment for the processes and locations investigated is 7.4% at Saltville, Va. for the isothermal addition of NaCl process.

VIII. Recommendations

It is recommended that consideration be given to chemical production of sodium chlorate before making a decision on the method of manufacture. See Survey Report H-35.503, .505 and .506.

[fol. 940]

Table XII

Investment and Cost Summary

Process		Evaporation	Refrigeration	Isothermal Salt Add'n	Pechiney
Plant Investment		$4,900,000	$5,000,000	$4,600,000	$4,600,000
Raw Materials		Brine	Brine	Brine	Brine
Net Production Cost, Saltville		107.32	107.03	103.71	100.38
$/T $NaClO_3$	McIntosh.	121.97	119.51	116.19	
	Lake Chas.	115.75	115.71	112.39	
% Return on Investment	Saltville ..	6.5	6.5	7.4	8.0
	McIntosh.	4.6	4.6	6.5	
	Lake Chas.	5.3	5.3	7.1	
Pay-Out Time—Yrs.	Saltville ..	7.6	7.6	7.1	6.9
	McIntosh.	8.9	8.9	7.6	
	Lake Chas.	8.4	8.4	7.3	

[fol. 941] IN UNITED STATES DISTRICT COURT

PLAINTIFFS' EXHIBIT 12

Olin Mathieson Chemical Corporation
Industrial Chemicals Division

Research and Development Department

H-35.505 Electrochemical Survey Report
General Subject: H—Miscellaneous Inorganic Chemicals

Name	Res. Mgr.	Super.	Work By	Report By
J. O. Logan				
B. H. Wojcik				
B. H. Nicolaisen				
W. C. Gardiner	X	X		
R. A. Turner			X	X
G. D. Byrkit				
R. E. Maizell				
S-B. H. Wojcik				
S-R. M. Thomas				
S-R. C. Harshman				
S-G. K. Weisse				
S-T. H. Dexter				
S-C. M. White				

Chg. No. 63-1-743-100-2011

Report dated: 11/21/56-2/26/57

Report typed: 3/6/57: CB

Chemical Production of Sodium Chlorate from Caustic and Chlorine

Approved: W. C. Gardiner.

Date: March 11/57.

Signed: R. A. Turner.

Date: March 7, 1957.

[fol. 942] Summary

The economics of producing 40 tons of sodium chlorate per day from caustic and chlorine have been investigated for three sources of decomposition: (1) The Hooker S-3 cell producing 50% caustic and wet chlorine gas, (2) The Hooker S-3 cell producing cell liquor and wet chlorine gas, and (3) The Mathieson E-11 cell producing 50% caustic and wet chlorine gas. The production costs estimated for decomposition have been converted to a net cost of raw materials to the chemical chlorate section of the plant and are tabulated below with the investments for the decomposition sections of the plant.

	Hooker S-3 50% Caustic	Hooker S-3 Cell Liquor	Mathieson E-11 50% Caustic
Net Raw Materials Cost, $/Ton $NaClO_3$	$129.35	$102.85	$124.35
Investment for Decomposition equivalent to 40 T $NaClO_3$/Day	$5,400,000	$3,360,000	$5,406,000

Although the use of cell liquor from a Hooker S-3 cell as a raw material appears to be more economical, the chlorate section of the plant will have to bear the cost of the additional evaporation.

The net production cost of electrochemical sodium chlorate as reported by A. J. Holmes in Survey Report H-35.502 and H-35.504 ranged from $104 to $120 per ton. As these total production costs are less than the raw material costs for chemical chlorate it is concluded that the chemical process is not suitable for the production of 40 tons per day of sodium chlorate.

[fol. 943] IN UNITED STATES DISTRICT COURT

PLAINTIFFS' EXHIBIT 13

Olin Mathieson Chemical Corporation
Industrial Chemicals Division

Research and Development Department

H-35.506 Electrochemical Survey Report
General Subject: H—Miscellaneous Inorganic Chemicals

Name	Res. Mgr.	Super.	Work By	Report By	
J. O. Logan					Chg. No. 63-1-743-200-2011
B. H. Wojcik					
B. H. Nicolaisen					Report Dated: 3/6/57
W. C. Gardiner	X	X			
R. A. Turner			X	X	Report Typed: 3/7/57:CB
G. D. Byrkit					
R. E. Maizell					
S-B. H. Wojcik					
S-R. M. Thomas					
S-R. C. Harshman					
S-T. H. Dexter					
S-C. M. White					
S-G. K. Weisse					

Production of Sodium Chlorate from Soda Ash at Saltville, Virginia

Approved: W. C. Gardiner. Signed: R. A. Turner.

Date: March 11/57. Date: March 8, 1957.

Received March 21, 1957, B. H. Wojcik.

[fol. 944] IN UNITED STATES DISTRICT COURT

PLAINTIFFS' EXHIBIT 14

Olin Mathieson Chemical Corporation

Date: 2/19/58.

To: Dr. B. H. Wojcik, at Baltimore.
From: J. O. Logan, at Baltimore.
Subject: Chlorates and Perchlorates

Copies To J. F. Newell
C. C. Hightower
W. A. King

Confirming conversation, we are to assemble our information on the economics of chlorate and perchlorate production, capital requirements, preferred location and size of plant and sales outlets.

By copy of this to Newell and Hightower, I am suggesting they designate an individual to represent Operations in the assembly of this information.

What we put together need not be final but should include a statement of where we stand with respect to the knowledge necessary to put both types of plants in operation.

Per my discussion with Hanford, we will supply this information by March 1st and he will assemble similar information from other Divisions of the Corporation interested in the field of perchlorates. He will then call a meeting of the Solid Fuels committee at which we and other Divisions will be represented and at which time decisions can be made with respect to further action leading to the possible production of these items.

B. H. W., 2/21/58. J. O. Logan.

Received February 20, 1958. B. H. Wojcik.

[fql. 945] IN UNITED STATES DISTRICT COURT

PLAINTIFFS' EXHIBIT 14A

March 27, 1958.

Mr. J. O. Logan, Baltimore.
Mr. H. W. Schiessl, Baltimore.

B. H. Wojcik
C. C. Hightower
K. Lewis

Sodium Chlorate and Ammonium Perchlorate

As per your request to Dr. Wojcik, the following cost estimates on subject chemicals have been prepared, with the help of K. Lewis, J. Wood, and the prior reports of Dr. Gardiner's group at Niagara.

A. Sodium Chlorate—Electrolytic Process

Cost estimates for the electrolytic production of 40 tons per day sodium chlorate have been prepared by Dr. Gardiner. The best case, for Saltville, indicates a production cost of $100.38/T, with an investment of $5,154,000. At the current OPDR market price of $180/T, return on investment is 9.4 per cent, with a pay out of 6.5 years. The economic evaluation is summarized in Table I.

Published information and our own data on electrolytic chlorate are fairly extensive; operating conditions and capacities are known. However, since such a large investment is indicated, it would be advisable to obtain design data on several of the process steps on a pilot scale and to build and operate a prototype cell which could later be incorporated as one unit of the full scale plant.

B. Sodium Chlorate—Chemical Process

Chlorate may be prepared by chlorination of caustic. Assuming the chlorine and caustic for 40 tons/day chlorate are obtained by increasing the amperage on the McIntosh E-8 cells, the total investment would be $4 million for the chlorate plant and for the additional equipment to accommodate the higher currents and larger production. Production cost

would be $117.56/T sodium chlorate. A return on investment of 9 per cent is indicated, with a pay-out of 6.6 years (see Table II).

Some development on this process has already been done at Niagara, but further study is needed before commercialization.

It should be noted that the use of caustic and chlorine to make chlorate is a down grading of these products, at present market prices. The market value of the caustic and chlorine, assuming perfect conversion to chlorate, is $257 per ton chlorate, whereas the latter sells for $180/T.

[fol. 946] C. Ammonium Perchlorate

This material is produced by reacting sodium perchlorate with either ammonium chloride or with ammonia and HCl. Sodium perchlorate for this process is obtained by the electrolysis of sodium chlorate in platinum anode cells. Cell capacity information is available in the literature. The problems of anode design have been mentioned in several reports. Only general published information is available for the final conversion of sodium to ammonium perchlorate. Therefore, complete piloting of these processes would be necessary.

To produce 10 tons per day ammonium perchlorate would require an investment of $1,830,000, starting with captive sodium chlorate as the raw material. This investment would cover the electrolysis of sodium chlorate to sodium perchlorate and the metathetical conversion to the ammonium derivative.

Pricing sodium chlorate into this process at $100.38 (see Section A above), the production cost of ammonium perchlorate would be $300/T. The 1957 year end market price was $680/T. On this basis, return on investment is 26.7 per cent, with a 3.1 year pay out. The financial criteria are summarized in Table III. This, of course presupposes an internal source of sodium chlorate as the starting material at $100.38/T. If the sodium chlorate must be purchased at the market price of $180/T, production cost of ammonium perchlorate would be $420/T, yielding a return on investment of 16.0 per cent, with a 4.6 year pay out. (See Table IV.)

Another process for the manufacture of sodium perchlorate is non-electrolytic. It was developed at Niagara some years ago under government contract. The purpose of this

process was to avoid use of platinum electrodes and electrical energy. The procedure is to oxidize sodium chlorate with lead dioxide in the presence of sulfuric acid to form sodium perchlorate and lead sulfate. The latter is then oxidized in a separate step with sodium hypochlorite in the presence of caustic soda to form lead dioxide which is recycled.

[fol. 947] At the inception of the pilot plant stage of this development, the work was taken over by HEFO. We have no reports in this division to indicate how the development fared, but HEFO undoubtedly has this information, along with production cost estimates.

Generally speaking, this latter process is not as attractive as the electrolytic route to sodium perchlorate. In effect, it amounts to oxidation of sodium chlorate with chlorine (via hypochlorite), therefore, it does not obviate the expenditure of electrical energy. It has the further complications of handling, regeneration, and recovery of lead dioxide. The main advantages of the process are flexibility of location, since it does not depend on proximity to cheap power; and the elimination of a large investment in platinum for anodes. For example, the metal cost alone for a 10 ton/day perchlorate installation is about $400,000.

Market Picture

No up-to-date survey on subject materials is available, but attached is a Market Research report prepared by J. J. Hayes, December, 1956. Chemical Week, October 5, 1957, reported excess ammonium perchlorate capacity of the then current demand. Hooker Electrochemical and Foote Mineral have since announced intentions for producing lithium and ammonium perchlorates. Presently, the major outlet for ammonium perchlorate is in military application as an oxidant for solid propellants.

Original Signed By H. W. Schiessl

HWS:mea

Enclosures: Tables I, II, III, IV.

[fol. 948]

Economic Evaluation—Class Projects

Table I

See Standard Procedure No. 7 and reverse side of Original of this form for detailed instructions. Date _____

Title	Amount	Appropriation Number
Operating Division or Administrative Department	Originated by	
Plant Location / Department Name & Number	Building Name & Number	

☐ Expansion of Existing Equipment (Complete Columns A, B, and C) ☐ Equipment to Produce New Products (Complete Column B only)

PARTICULARS	A PRESENT	% SALES	B PROJECTED	% SALES	C DIFFERENCE	% SALES
INVESTMENT					0	
Gross Plant						
Inventories						
Receivables						
Sub Total			3,[illegible],000			
After Tax Expense			---			
TOTAL INVESTMENT			[illegible]			
ANNUAL SALES AND PROFITS						
Units			14,[illegible]			
Unit Selling Price			[illegible]			
Net Sales			[illegible]			
Production Costs w/o Depreciation			[illegible]			
Depreciation (Normal Rates) [illegible]			[illegible]			
Shipping and Warehousing			---			
Cost of Sales			1,[illegible],700			
Gross Profit			1,162,300			
Selling, Advertising, Administrative [illegible]les			157,700			
Pretax Profit			1,004,600			
Federal Taxes (52 %)			522,400			
NET PROFIT			482,200			
% Total Investment			[illegible]			
PAYOUT TIME — ADD BACK						
Tax Savings—Accelerated Depreciation			--			
~~Depreciation on books~~			335,800			

☐ Expansion of Existing Equipment (Complete Columns A, B, and C) | ☐ Equipment to Produce New Products (Complete Column B only)

PARTICULARS	A PRESENT	A % SALES	B PROJECTED	B % SALES	C DIFFERENCE	C % SALES
INVESTMENT						
Gross Plant						
Inventories						
Receivables						
Sub Total						
After Tax Expense						
TOTAL INVESTMENT						
ANNUAL SALES AND PROFITS						
Units						
Unit Selling Price						
Net Sales						
Production Costs w/o Depreciation						
Depreciation (Normal Rates)						
Shipping and Warehousing			---			
Cost of Sales			1,465,700			
Gross Profit			1,162,300			
Selling, Advertising, Administrative			157,700			
Prefax Profit			1,004,600			
Federal Taxes (52 %)			522,400			
NET PROFIT			482,200			
% Total Investment			9.6			
PAYOUT TIME — ADD BACK						
Tax Savings—Accelerated Depreciation			--			
Depreciation on books			306,800			
Profit — Cash Basis			789,000			
% Total Investment			15.3			
PAYOUT TIME			6.5			

OLIN 12/7-4

Prepared by

Approved by

Regional Accounting Department

Distribution

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6—Buff
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FORM 6511 858

OLIN MATHIESON CHEMICAL CORPORATION

[fol. 949]

Economic Evaluation—Class Projects

Table II

See Standard Procedure No. 7 and reverse side of Original of this form for detailed instructions. Date

Title	Amount	Appropriation Number
Sodium Silicate - 4 T/Day from Caustic & Chlorine		
Operating Division or Administrative Department	Originated by	
Plant Location / Department Name & Number	Building Name & Number	

☐ Expansion of Existing Equipment (Complete Columns A, B, and C) ☐ Equipment to Produce New Products (Complete Column B only)

PARTICULARS	A PRESENT	A % SALES	B PROJECTED	B % SALES	C DIFFERENCE	C % SALES
INVESTMENT						
Gross Plant			3,620,000			
Inventories			75,000			
Receivables			325,000			
Sub Total						
After Tax Expense						
TOTAL INVESTMENT			4,000,000			
ANNUAL SALES AND PROFITS						
Units Tons			14,600			
Unit Selling Price			180			
Net Sales			2,628,000			
Production Costs w/o Depreciation			1,476,200			
Depreciation (Normal Rates) 6.67%			240,100			
Shipping and Warehousing			--			
Cost of Sales			1,716,300			
Gross Profit			911,700			
Selling, Advertising, Administrative 6% Sales			157,700			
Pretax Profit			754,000			
Federal Taxes (52 %)			392,100			
NET PROFIT			361,900			
% Total Investment			9.0			
PAYOUT TIME — ADD BACK						
Tax Savings—Accelerated Depreciation			--			

PARTICULARS	A PRESENT	% SALES	B PROJECTED	% SALES	C DIFFERENCE	% SALES
INVESTMENT						
Gross Plant			3,600,000			
Inventories			75,000			
Receivables 45 Days			325,000			
Sub Total						
After Tax Expense						
TOTAL INVESTMENT			4,000,000			
ANNUAL SALES AND PROFITS						
Units Tons			14,600			
Unit Selling Price			180			
Net Sales			2,628,000			
Production Costs w/o Depreciation			1,476,200			
Depreciation (Normal Rates) 6.67%			240,100			
Shipping and Warehousing			--			
Cost of Sales			1,716,300			
Gross Profit			911,700			
Selling, Advertising, Administrative 6% Sales			157,700			
Pretax Profit			754,000			
Federal Taxes (52 %)			392,100			
NET PROFIT			361,900			
% Total Investment			9.0			
PAYOUT TIME — ADD BACK						
Tax Savings—Accelerated Depreciation			--			
Depreciation on books			240,100			
Profit — Cash Basis			602,000			
% Total Investment			15.1			
PAYOUT TIME Years			6.6			

Prepared by

Approved by

OLIN 2-1-71

Regional Accounting Department

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FORM 6511 888

OLIN MATHIESON CHEMICAL CORPORATION

500

Economic Evaluation—Class Projects

Table III

See Standard Procedure No. 7 and reverse side of Original of this form for detailed instructions. Date _____

Title	Amount	Appropriation Number
[illegible] Perchlorate 10 T/Day		
Operating Division or Administrative Department	**Originated by**	
[illegible] Caustic Chlorate at Same Location		
Plant Location / **Department Name & Number**	**Building Name & Number**	

☐ Expansion of Existing Equipment (Complete Columns A, B, and C) ☐ Equipment to Produce New Products (Complete Column B only)

PARTICULARS	A PRESENT	A % SALES	B PROJECTED	B % SALES	C DIFFERENCE	C % SALES
INVESTMENT						
Gross Plant			1,830,000			
Inventories			[illegible]			
Receivables [illegible] Days			396,000			
Sub Total			2,226,000			
After Tax Expense			--			
TOTAL INVESTMENT			2,226,000			
ANNUAL SALES AND PROFITS						
Units			3,650			
Unit Selling Price			600			
Net Sales			2,[illegible]2,000			
Production Costs w/o Depreciation			972,000			
Depreciation (Normal Rates) 6.67%			122,100			
Shipping and Warehousing			--			
Cost of Sales			1,095,000			
Gross Profit			1,387,000			
Selling, Advertising, Administrative 6% Sales			148,900			
Pretax Profit			1,238,100			
Federal Taxes (52 %)			643,810			
NET PROFIT			594,290			
% Total Investment			26.7			
PAYOUT TIME — ADD BACK						
Tax Savings—Accelerated Depreciation						
Depreciation on books			122,061		7.6	

PARTICULARS	PRESENT	% SALES	PROJECTED	% SALES	DIFFERENCE	% SALES
INVESTMENT						
Gross Plant			1,830,000			
Inventories			90,000			
Receivables 45 Days			306,000			
Sub Total			2,226,000			
After Tax Expense			--			
TOTAL INVESTMENT			2,226,000			
ANNUAL SALES AND PROFITS						
Units			3,650			
Unit Selling Price			600			
Net Sales			2,190,000			
Production Costs w/o Depreciation			972,900			
Depreciation (Normal Rates) 6.67%			122,100			
Shipping and Warehousing			--			
Cost of Sales			1,095,000			
Gross Profit			1,387,000			
Selling, Advertising, Administrative 6% Sales			148,900			
Pretax Profit			1,238,100			
Federal Taxes (52 %)			643,810			
NET PROFIT			594,290			
% Total Investment			26.7			
PAYOUT TIME — ADD BACK						
Tax Savings—Accelerated Depreciation						
Depreciation on books			122,061			
Profit — Cash Basis			716,339			
% Total Investment			32.2			
PAYOUT TIME Years			3.1			

Prepared by

Approved by

OLIN D 2-17-6

Regional Accounting Department

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FORM 6511 555

OLIN MATHIESON CHEMICAL CORPORATION

501

ECONOMIC EVALUATION—CLASS PROJECTS

Table IV

See Standard Procedure No. 7 and reverse side of Original of this form for detailed instructions. Date _____

Title	Amount	Appropriation Number
Ammonium Perchlorate - 10 T/Day		
Operating Division or Administrative Department	Originated by	
From Purchased Chlorate		
Plant Location / Department Name & Number	Building Name & Number	

☐ Expansion of Existing Equipment (Complete Columns A, B, and C) ☐ Equipment to Produce New Products (Complete Column B only)

PARTICULARS	A PRESENT	A % SALES	B PROJECTED	B % SALES	C DIFFERENCE	C % SALES
INVESTMENT						
Gross Plant			2,000,000			
Inventories			[illegible]			
Receivables			306,000			
Sub Total						
After Tax Expense			--			
TOTAL INVESTMENT			[illegible]			
ANNUAL SALES AND PROFITS						
Units Ton			3,000			
Unit Selling Price			660			
Net Sales			[illegible]			
Production Costs w/o Depreciation			[illegible]			
Depreciation (Normal Rates)			[illegible]			
Shipping and Warehousing			--			
Cost of Sales			1,533,000			
Gross Profit			949,000			
Selling, Advertising, Administrative 6% Sales			[illegible]			
Pretax Profit			[illegible]			
Federal Taxes (52 %)			416,042			
NET PROFIT			384,030			
% Total Investment			16.0			
PAYOUT TIME — ADD BACK						

☐ Expansion of Existing Equipment (Complete Columns A, B, and C) | ☐ Equipment to Produce New Products (Complete Column B only)

PARTICULARS	A PRESENT	% SALES	B PROJECTED	% SALES	C DIFFERENCE	% SALES
INVESTMENT						
Gross Plant			2,[illegible]			
Inventories			[illegible]			
Receivables			3[illegible]			
Sub Total						
After Tax Expense			--			
TOTAL INVESTMENT			[illegible]			
ANNUAL SALES AND PROFITS						
Units			3,[illegible]			
Unit Selling Price			6[illegible]			
Net Sales			[illegible]			
Production Costs w/o Depreciation			[illegible]			
Depreciation (Normal Rates)			[illegible]			
Shipping and Warehousing			--			
Cost of Sales			1,533,000			
Gross Profit			949,000			
Selling, Advertising, Administrative			[illegible]			
Pretax Profit			[illegible]			
Federal Taxes (52 %)			[illegible]			
NET PROFIT			3[illegible]			
% Total Investment			16.0			
PAYOUT TIME — ADD BACK						
Tax Savings—Accelerated Depreciation			--			
Depreciation on books			133,[illegible]			
Profit — Cash Basis			517,433			
% Total Investment			21.6			
PAYOUT TIME Years			4.6			

Prepared by

Approved by

Regional Accounting Department

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FORM 6511 858

OLIN MATHIESON CHEMICAL CORPORATION

[illegible]

[fol. 952] IN UNITED STATES DISTRICT COURT

PLAINTIFFS' EXHIBIT 15

Industrial Chemicals Division
Division Objectives

[Report dated April 4, 1958]

[Extracts]

J. Birkhahn, Csr, 10/4/61.

[fol. 953] Olin Mathieson Chemical Corporation

Industrial Chemicals Division
Mathieson Building Baltimore 3, Maryland

Objectives

Enclosed herein is the present statement of Industrial Chemicals Division (INDCHEM) objectives. It is the result of discussion among INDCHEM management and the independently expressed opinions of twenty supervisory personnel.

We believe strongly in the future of the U. S. economy and that the opportunities for chemical industry growth over the long run are almost unlimited. All phases of human existence involve chemicals and even those items not commonly thought of in terms of chemical markets, such as furniture, hardware and construction materials, represent ultimate outlets for existing and new chemicals. We wish to share in the expansion of the chemical frontiers.

This statement does not include detailed financial data although it is predicated on the basic premise of all business —to produce maximum return on investment and sales over protracted periods of time. But such is not attained by the mere financial attractiveness of individual projects. Rather, it is attained by an integrated program which utilizes to the maximum a constantly growing storehouse of raw materials, technical, market and management know-how.

To be an effective day to day guide, this statement must be reviewed regularly and suitable changes made in the actions prescribed to attain the principal objectives. It must, of course, be altered to meet Corporate objectives and financial capabilities. An indication of general approval from Corporate Management will permit us to develop detailed costs and timetables for carrying forward under these objectives.

J. O. Logan, Vice President & General Manager.

April 4, 1958.

[fol. 954] Summary of Objectives

1. Expand Production and Sales in the principal phases of INDCHEM'S existing business (See Tab. 1) and maintain a pre-eminent position in the following industries:
   a. Chlor-Alkali—Chlorine, Caustic Soda, Soda Ash, Sodium Bicarbonate.
   b. Nitrogen—Ammonia, Nitric Acid, Sodium Nitrate, Hydrazine.
   c. Sulfur—Sulfur, Sulfuric Acid.

2. Develop further the production and sale of co-product or by-products stemming from the above basic chemical areas, including:
   a. Carbon Dioxide—an established profit-maker based on our ammonia soda process which needs geographical expansion.
   b. Hypochlorites—broaden base of HTH products and add other hypochlorites and derived formulations.
   c. Nitrogen Derivatives—exploitation of hydrazine compounds in the resin and fuel additive fields, production of additional nitrates (for example, ammonium solutions).
   d. Sulfur Compounds—including SO_2, SO_3 and alum.

3. Develop the technology supporting the above product groups through Research and Process Development, specifically in the areas of:
   a. Electrochemistry—essential to the efficient production of Chlorine, Caustic and probably Soda Ash. Useful in other processes for new and related products.
   b. Product Application—greater knowledge of the uses of our principal products and better facilities to support introduction of new products.
   c. Process Improvement—aimed at higher efficiencies, lower capital and operating costs.

4. Creation of products new to OMCC but definitely related to the basic product groups, the technology or markets in which INDCHEM is now active:

   a. Electrochemical Process Products—such as, but not limited to, Chlorates and Perchlorates, Hydrosulfite, Sulfide, Caustic Potash.

   b. Products Related to Other Processes—Calcium Carbonate and Calcium Silicate Pigments, Sulfur Dioxide and Trioxide, Urea, possibly Cement.

   c. Products Serving Present Markets—Various "Bleaches" such as Lithium Hypochlorite, Resins and Fillers for textiles and paper, automotive hydraulic fluids and synthetic lubricants.

[fol. 955] 5. Strengthen Less Attractive Segments of the Division—or failing to find solution, arrange for disposition on most attractive basis:

   a. Automotive Products—add products to spread costs; continue purchase of glycol until OMCC production expanded.

   b. Insecticides—curtail research expenditure, dispose of certain facilities, cut overhead and remain producer of basic items like DDT.

6. Attract Customers to our Plant Locations—Increase the proportion of our production sold on a semi-captive, pipeline basis. Build up industry nuclei for future INDCHEM sales.

7. Consider the Production of Chemicals Using Our Products and Sold to INDCHEM Markets:

   Many chemicals consume the basic products we manufacture, for example, the Organic chemical industry is highly dependent upon chlorine. Likewise, many products outside the scope of INDCHEM'S present activities go to markets in which we are active. We propose, therefore, to consider all possible opportunities for producing established chemicals going to our established markets which would represent captive consumption of our basic materials.

8. Improve INDCHEM Raw Material Position—to be basically sound we need:

   a. Controlled supply of fuel—we have no owned fuel sources. We need gas at Lake Charles and at McIntosh for fuel and/or chemical up-grading.
   b. Power Sources—continued development in electrochemistry requires constant effort to find cheaper DC at *point of use.*
   c. Salt and Limestone—new sources or longer range guaranteed supply at Niagara Falls, Lake Charles and new locations.

9. Broadened Geographical Approach to Production and Distribution:

   a. New plant locations serving the industrial North, the West Coast and the growing Mountain area.
   b. Emphasis on water side locations and water transportation. No major plants except on navigable water.
   c. Distribution terminals wherever market can be reached from existing plants (via bulk water movement) until local production established.
   d. Stronger transportation effort on cutting freight equalization and freight absorption, reducing customer's delivered cost and improved penetration of distant markets.

[fol. 956] 10. Outside Purchases—INDCHEM will continue to use outside purchased materials to:

   a. Reach markets not available from present plants.
   b. Cover fluctuations in demand, thereby permitting more even operation of Division plants.
   c. Improve reciprocal balance in OMCC favor.

11. Foster Research to a Greater Extent:

The present budget, representing approximately 1.0% of sales, is too small. It should be expanded to about

3.0% to permit a vigorous program along the aforementioned objectives. Principal activity should be short range, with limited "basic" or "free rein" research in general areas of INDCHEM activity. Needs include:

a. Better facilities, particularly for Application Research.
b. Unification at one location rather than several scattered groups.
c. Continued further correlation of Plant Development and Research work with most pilot plant work done at location of final installation.

12. Better Organization and Utilization of Personnel:

a. Within the Corporation—work toward resolving the overlapping and sometimes confusing to the customer present situation where much production is not in selling Division or where two or more Divisions are selling same products to similar markets.
b. Within the Division:

1. Develop a new organization chart and clarify responsibilities.
2. Organize in units having responsibility (properly coordinated) and capable of being separated or transferred without loss of efficiency.
3. Provide better recruiting, training and evaluation techniques.
4. Plan for and develop future Managerial talent.
5. Improve safety record in plants.
6. Have program for personnel approaching retirement.
7. Effective award and reward systems.

[fol. 957] 8. Improved relations with Staff and other Division personnel.

9. Sharpen our work on cost control, quality control and materials handling.

13. Effective Community Relations—to minimize adverse publicity and labor relations, carry out the following:

a. Active participation in community affairs by personnel.

b. Publicity of safety and anti-pollution programs.

c. Division support of worthy local causes—particularly research or educational activities.

d. Publicity on part played by INDCHEM products in the economy and the effects on human welfare.

[fol. 958] Section 3

Objective: Develop the Technology Supporting Product Groups through Research and Process Development.

Of the three major phases of our business, as discussed in Section 1, there is probably less technological development currently taking place in ammonia and sulfuric acid than in the alkali-chlorine area. Since the latter is the largest of the three segments of our business, it is fitting that our principal technological developments should be related thereto.

Electrochemistry—The electrolytic cell for the dissociation of salt brine is the essence of our alkali-chlorine business. The continued development of our technology is essential to the efficient production of chlorine and caustic soda. In order to accommodate the indicated unbalanced position of these commodities and to provide sodium oxide for carbonation to soda ash, the electrolytic cell is also the basis of future soda ash production. This is particularly true when it is apparent that sodium oxide production as caustic soda from cells is almost as cheap today as is the production of sodium oxide in the form of soda ash from alkali plants built years ago. It is, therefore, believed that future soda ash production cannot be justified in the form of ammonia soda plants (except in possibly unusual conditions) and that future soda ash production will come from caustic produced in the electrolytic cell.

Our Research and Development program, in conjunction with our Plant Development people, is aggressively pursu-

ing the development of more efficient mercury cells. This program is currently active with a large commercial test unit in operation at McIntosh and a small experimental unit at Niagara Falls. We are also running a semi-pilot test unit at Lake Charles on the production of soda ash by the carbonation of caustic soda. We propose to pursue this work vigorously so that future installations will reflect the latest knowledge as will any expansions or modifications of our existing plants. This work is directly related also to new products which will be discussed later.

[fol. 959] Section 4

Objective: Creation of Products New to OMCC but Definitely Related to the Basic Product Groups, the Technology or Markets in Which INDCHEM Is Now Active.

In the development of products new to OMCC, we would use three basic criteria, namely, whether or not the new product is related to existing products (for example, sulfur trioxide from sulfuric acid plants), is produced by an extension of existing technology (the use of sodium amalgam to produce sodium hydrosulfite in place of caustic soda), or is destined for a market in which we are already active. The more of these criteria to which a new product can measure up, the better its chance of success, assuming, of course, that the economic aspects of its production are attractive.

Electrochemical Process Products—Products INDCHEM should seriously investigate, since they meet one or more of the aforementioned criteria, include the following:

a. Chlorates and Perchlorates—We have an unparalleled opportunity to move sodium chlorate into the paper industry as the result of our work on the installation of chlorine dioxide generators. We have a captive consumption for sodium chlorate. The development of solid fuels for missiles is creating demand for perchlorates. The production of perchlorates from chlorate enhances the economic attractiveness of chlorate production. Possible production is being reviewed with Dr. Hanford currently and if we do not take action in the near future we will lose the opportunity.

b. Hydrosulfite and Sulfide—These sulfur products can be prepared from sodium amalgam produced in our mercury cells. Substantial experimental work is behind us and decision only awaits capital and satisfactory economic conditions.

c. Caustic Potash—We can produce this material in our standard mercury cell at any time the market conditions and our captive consumption (Blockson) justify. At the present time, the market is over-produced forcing some adjustment of price levels. After stabilization, production will again be reviewed.

There are other products similar to the aforementioned which fall into this category and on which constant review will be maintained.

Products Related to Other Processes—In the non-electrolytic field, our ammonia soda process produces calcium chloride which can be reacted to form calcium carbonate and calcium silicate, pigments which are growing in the paper, rubber and paint trades. We have a research program initiated on these products and would expect to eventually put the process into operation at Saltville.

Sulfur dioxide and trioxide are produced in all the acid plants enroute to sulfuric acid. We have researched a superior stabilizer for sulfur trioxide. At such time as economics and practices in the consuming industries justify, we can engage in the production of these products.

[fol. 960] Urea is widely used industrially and as a plant food. Our ammonia plant at Lake Charles, with its by-product CO_2 production, would represent a sound raw material position for the production of urea.

A couple of years ago, we presented an attractive economic picture on the production of cement at Lake Charles utilizing solids from our oyster shell and ammonia soda processes. This project was turned down at that time but there are certain periods of construction activity when the demand for cement is such that it would justify serious consideration of production.

Products Serving Present Markets—We are extensively engaged in marketing "bleaches", including sodium chlorite, the various forms of HTH and chlorine. We should extend our product line in these fields and include such items as lithium hypochlorite and possibly perborate.

Of all the materials we have sold to the textile and paper industries, none has gone into the finishing of the final product. Our sales have been made to the pulping and textile fiber processing business rather than to the paper and cloth operations. In the latter areas, the market for chemicals is possibly greater than in the preparation of the raw materials. We need to invade these markets and our textile resin is the first step in this direction. This effort should be expanded by a multiplicity of such resin products adapted to both textile and paper requirements.

Our Automotive product line needs additional hydraulic fluids designed to meet heavy duty service conditions developing in the automotive and aircraft industries. Also, more and more of the total lubricants used are coming from chemical sources. Our oil additive program and our hydraulic fluid program must be pursued vigorously.

[fol. 961] Section 9

Objective: Broadened Geographical Approach to Production and Distribution.

New Plant Locations—INDCHEM has been essentially a Southern Company with the majority of its production and sales being made to Southern consumers. We have never participated extensively in the vast industrial markets surrounding the Great Lakes and to only a limited extent in the North Atlantic industrial areas. Only specialty products have been moved to the growing market on the West Coast and in the Mountain areas. As circumstances develop, we propose to install productive capacity for one or more of our products in the Middle-West and on the West Coast or at any other location where demand justifies, even though such a location would represent new territory for us.

[fol. 962] Section 10

Objective: Outside Purchases.

Exclusive of antifreeze, outside purchases for resale by INDCHEM totaled $2.26 million during 1957. On this we had a net profit of 3% of sales. We will continue to use outside purchases for the following purposes:

To Reach Markets—Certain areas are unavailable from our existing plants but contain markets we wish to serve with other products. To round out our "package", we will purchase material, such as soda ash from Wyandotte, to enhance our overall position in the marketing area.

To Cover Fluctuations in Demand—Purchase arrangements consummated in recent years have permitted an adjustment of the rate of purchase in conformity with business conditions. At the same time, we have not been forced to adjust our own production to the same degree. For example, Tab. 12 shows that during 1956 and 1957 INDCHEM'S liquid chlorine production rate was maintained very substantially over 100% of rated capacity whereas the industry rate fluctuated from substantially below 100% to slightly over 100%. The continued operation of our plants at relatively high levels with the consequent marginal profits obtained thereby is ample justification of the outside purchase for resale approach.

Improve Reciprocal Balance—There are some purchasers of our materials who would expand their purchases if a more favorable reciprocal trade balance is maintained. By picking the firm from which purchases are made, the balance can be improved in OMCC's favor.

[fol. 963] Section 11

Objective: Foster Research to a Greater Extent.

The 1958 Research budget for INDCHEM amounts to $1.26 million or approximately 1% of sales. This is not sufficient to properly develop the processes and products required by the objectives of this Division. Our Research budget should be expanded to approximately 3% of sales.

It is recognized that the principal Divisional research

activity should be short range in nature and related directly to the current Division objectives. However, some basic research in the general areas of INDCHEM activity is necessary to maintain fundamental positions.

To produce the results we desire, we have the following objectives in our Research activity:

Better Facilities—We need improved physical equipment and housing and the addition of substantial amounts of application research facilities. We are woefully lacking the equipment necessary to properly evaluate the application of our products to the principal marketing areas.

Unification—At the present time, we have INDCHEM research activity being carried on at New Haven, Port Jefferson, Rochester and Niagara Falls in addition to specialized activity in one or more of the plants (mercury cell operation at McIntosh). For better coordination and supervision and, hence, improved efficiency, we need our facilities unified and are working on a program of accomplishing this at Niagara Falls. We expect to transfer the Rochester research activity to Niagara later this year, and upon disposition of the Port Jefferson facility, we will attempt to transfer such activity to Niagara.

Correlation of Plant Development and Research—Some of our effort, particularly that devoted to the improvement of existing processes, is best carried out in our plants. Furthermore, pilot plant work should preferably be done by the plant at the ultimate location of the commercial facility. Therefore, our Research and Development work calls for constant coordination between plant technical personnel and the Research staff. This coordination has improved materially in recent years and we hope to further develop the relationship.

[fol. 964] IN UNITED STATES DISTRICT COURT

PLAINTIFFS' EXHIBIT 16

Olin Mathieson Chemical Corporation
Industrial Chemicals Division

Research and Development Department

H-35.701 Engineering Survey Report
General Subject: H—Miscellaneous Inorganic Chemicals

Name	Res. Mgr.	Super.	Work By	Rep. By	
B. H. Wojcik					Charge No.: 530-743-100-2004
B. H. Nicolaisen					
W. C. Gardiner	X	X			Report Dated: April 29, 1958
R. C. Harshman		X			
R. A. Turner			X	X	Report Typed: May 9, 1958 :alh
A. J. Holmes					
G. D. Byrkit					
J. B. Haglind					
H. A. Bruson					
s-B. H. Wojcik					
s-R. M. Thomas					
s-T. H. Dexter					
s-C. M. White					
s-G. K. Weisse					
s-E. E. Harris					
s-A. W. Sawyer					
s-C. W. MacMullen					

Manufacture of Sodium Chlorate

Approved: R. C. Harshman. Signed: R. A. Turner.

Date: 2/4/59 Date: 12/5/58.

[fol. 965] Summary

The design of a plant to produce sodium chlorate chemically from chlorine and caustic is presented. This design was revised to obtain a plant which would operate with chlorine and solid sodium carbonate.

The economics of the two chemical processes are estimated and compared with the economics of the electrochemical processes from H-35.504.

The economic attractiveness of the chemical production of sodium chlorate from chlorine and caustic or sodium carbonate depends on the market situation of the raw materials.

If the chlorine which is to be used for chemical chlorate manufacture can be sold at market price, the electrochemical processes are more attractive. If excess chlorine and caustic or soda ash capacity exists, chemical production is approximately competitive with electrochemical production. Chemical production requires a lower investment and gives a shorter pay-out but has a higher production cost and hence gives less profit after the plant is paid-out. If excess decomposition is obtained by increasing the operating current on the existing chlor-alkali plant at Saltville, and the caustic can be sold at market price, the chlorine—soda ash process is more attractive than either the chlorine—caustic or the electrochemical processes.

The Financial Criteria tabulated below compared the chemical sodium chlorate processes and raw material market considerations with the electrochemical processes presented by A. J. Holmes in Electrochemical Survey Report H-35.504.

[fol. 966]

Chemical Processes	Fixed Capital	Annual Gross Profit (Loss)	Production Cost, $/Ton	Return on Investment, %	Pay-out Time, Yrs.
Chlorine and Caustic; Saltville					
Raw Materials at Market Less Sales	$1,701,000	$(1,954,000)	287.52		
Raw Materials at Present Production Cost ($20/Ton)	1,701,000	459,000	122.25	10	5.1
Raw Materials at Incremental Prod. Cost (43,000 amps)	3,826,000	(12,000)	154.55		
Chlorine and Caustic; McIntosh					
Raw Materials at Market Less Sales	1,701,000	(2,026,000)	292.48		
Raw Materials at Present Production Cost ($20/Ton)	1,701,000	390,000	127.02	8.5	5.6
Raw Materials at Incremental Prod. Cost (43,000 amps)	3,826,000	(84,000)	159.45		
Chlorine and Sodium Carbonate; Saltville					
Raw Materials at Market Less Sales	1,340,000	(1,255,000)	239.64		
Cl_2 at Market Less Sales; Na_2CO_3 at Prod. Cost ($17/Ton)	1,340,000	(704,000)	201.91		
Raw Materials at Present Production Cost	1,340,000	454,000	122.59	11.8	4.4
Cl_2 at Incremental Production Cost (43,000 amps) Na_2CO_3 at Present Production Cost ($17/Ton)	3,465,000	1,224,000	68.86	13.9	4.2
Cl_2 at Incremental Production Cost (43,000 amps) Na_2CO_3 at Market Less Sales	3,465,000	690,000	106.38	8	6.2
Electrochemical Processes					
Saltville	4,600,000	534,000	117.10	5	8.2
McIntosh	4,600,000	434,000	123.91	4.1	9.0
Lake Charles	4,600,000	454,000	122.54	4.3	8.8
Saltville (Pechiney Process)	4,600,000	604,000	112.16	5.7	7.7

[fol. 967] Conclusions:

Comparison of the financial criteria for chemical and electrochemical chlorate in Tables IV and V shows that the chemical processes have lower investments, lower production cost, higher returns and shorter pay-outs period than the electrochemical process.

The chemical sodium chlorate processes which appear from the financial criteria comparison to be more economically attractive than the electrochemical processes are predicated primarily on the market situation of the raw materials used. If all of the chlorine and caustic produced presently, or by increasing capacity, can be sold at market price the electrochemical chlorate processes will be more attractive.

Recommendations:

It is recommended that a survey of the market for chlorine and caustic be undertaken before a decision is made to produce sodium chlorate chemically.

It is also recommended that the economics of operating the chloralkali plants at increased current density be more firmly established.

[fol. 968] In United States District Court

Plaintiffs' Exhibit 17

Olin Mathieson Chemical Corporation

Date: June 27, 1958.

To: B. H. Wojcik at Baltimore
From: W. C. Gardiner at Niagara Falls

Copy to: E. Block
J. O. Logan

Subject: Sodium Chlorate

I am pursuing the several methods for obtaining additional information on the economics of chlorate manufacture as suggested Friday morning. Another approach occurs to me and that is to have Pechiney supply engineering information so that an engineering firm could estimate U.S. costs.

For example, Blaw-Knox's Paris representative could obtain building and equipment specifications and get quotations either in France for export or have U.S. equipment manufacturers quote on Pechiney drawings. In this way it could be kept confidential from OMCC if Pechiney so desires but we would get the cost of a U.S. plant. This would cost us money.

I found a note in my files reminding me that Howard Brown of Hooker told me that Pechiney was the second largest chlorate producer in the world.

The cells proposed by Pechiney for us were 18,000 amperes instead of 10,000 amperes as I stated yesterday.

Please let me know whether I should make any move on the above proposed method of getting more information.

W. C. Gardiner.

Received July 1, 1958, B. H. Wojcik.

[fol. 969] IN UNITED STATES DISTRICT COURT

PLAINTIFFS' EXHIBIT 18

July 2, 1958.

Dr. W. C. Gardiner, Niagara Falls
Dr. B. H. Wojcik, Baltimore

Mr. J. O. Logan
Mr. E. Block
Mr. B. H. Nicoalisen

Sodium Chlorate

Mr. E. Block has suggested that we first try to obtain European information on sodium chlorate manufacture through our International Division. I have sent a note to Bob Fodor asking him to get whatever data are available through our European contacts for evaluation.

In view of the suggestion made by Block I recommend that we hold off for the time being approaching Pechiney through Blaw-Knox or anyone else except representatives of our International Division.

B. H. Wojcik.

BHW:feg.

[fol. 970] IN UNITED STATES DISTRICT COURT

PLAINTIFFS' EXHIBIT 19

July 2, 1958.

Mr. R. S. Fodor, New Haven
Dr. B. H. Wojcik, Baltimore

Mr. E. Block
Mr. J. O. Logan
Mr. W. C. Gardiner

Sodium Chlorate

At a meeting held in Niagara Falls last week, Mr. Block suggested that I write you concerning European information on sodium chlorate.

As you know, from time to time, we have considered the possibility of producing sodium chlorate. Numerous cost estimates prepared by research engineers, based principally on literature data, leave much to be desired regarding profits. Recently several U. S. concerns have seen fit to either expand their capacity or install new plants for the production of chlorate. This naturally raises the question of just how accurate are our cost estimates.

To help us re-appraise production costs without causing any anxiety amongst our friends now producing sodium chlorate, we are seeking your assistance in acquiring European information on the subject. We are not ready at this time to make a commitment with any concern on a process.

At one time we received information from Pechiney. This was used in preparing a cost estimate. It turns out that, if the data examined is correct, the profits from such an operation fall short of our expectations, even below some of our other estimates. Perhaps, we should again approach Pechiney if for no other reason than to compare the in-hand data with something new. Electrochimie also produces sodium chlorate in France. I believe they will be kind enough to furnish cost estimating data.

Any help which the International Division can give us on this problem will indeed be appreciated.

B. H. Wojcik.

BHW:feg.

[fol. 971] IN UNITED STATES DISTRICT COURT

PLAINTIFFS' EXHIBIT 20

Extract From the Minutes of Division Management Meeting Held on July 28, 1958

Present: J. O. Logan, J. F. Newell, B. H. Wojcik, O. J. Theobald, Jr., W. A. King, C. C. Hightower, C. L. Williamson.

45.2—Sodium Chlorate

Dr. Wojcik reported that Mr. Block has instructed his group to take another look at subject product. R&D is obtaining additional foreign information to check out our economics.

[fol. 972] IN UNITED STATES DISTRICT COURT

PLAINTIFFS' EXHIBIT 22

Olin Mathieson Chemical Corporation

August 19, 1958.

B. M. Wojcik, Baltimore
R. C. Harshman, Niagara Falls

E. Block
J. O. Logan
B. H. Nicholaisen
W. C. Gardiner

Cost Estimate on Electrochemical Production of Sodium Chlorate

At Mr. Block's request, I have prepared independent estimates of the cost of production of sodium chlorate by the electrochemical route. These estimates indicate a reasonably attractive profit for this operation if a location can be found which has cheap power available, which permits minimum shipping charges on the product and which has reduced overhead by virtue of sharing the location with other producing facilities. We are currently investigating the possibility of locating such a plant at Qual, Ohio, at the

site of our aluminum operation. We are also checking on the effect on additional power load on rates at Saltville and McIntosh. When all of this data is available, we will issue a Survey Report. I'm sending this to get the data into your hands in the meantime.

Previous estimates made to evaluate the possibility of our undertaking electrochemical production of sodium chlorate at Saltville or McIntosh have indicated a low potential profit. In contrast to this, we know that Oldbury (now Hooker) built a plant for the electrochemical production of sodium chlorate at Columbus, Miss. This plant started operation about 1954 and is currently undergoing its third expansion, which will increase its capacity to more than twice the initial capacity. It is obvious that Hooker would not undertake repeated expansions of this plant if it did not appear to be a reasonably profitable operation. In an attempt to reconcile these two observations, W. C. Gardiner and R. E. Maizell have gathered considerable additional data and I have prepared independent cost estimates on Hooker's production of sodium chlorate at Columbus, Miss. The attached cost estimate and financial criteria present the results of these calculations. The calculations are based on the anticipated operation at Columbus, Miss., when the current expansion is completed. This will give an estimated production capacity of 75 tons of chlorate per day.

Examination of this data and comparison with previous estimates points out that the three most important cost factors are:

1. Power rate
2. Freight equalization cost
3. Overhead cost

[fol. 973] It is significant to note that the Hooker plant at Columbus is in a relatively favorable position with respect to all three of these factors. The plant is close to a major segment of the market (the southern pulp and paper mills) and the only other competitor in the area is nearby. It is probable that the freight rates from Columbus, Miss. to major consuming points are identical to those from American Potash's plant at Aberdeen, Miss. (due on stream sometime in 1958) and hence Hooker is able to ship its product with negligible freight equalization charges. The plant

is located in the TVA power area and hence has the advantage of low power rates. With the expansion presently underway, the Hooker plant is a relatively large plant and it also shares this location with at least one other producing facility (phosphorus pentasulfide). These factors lower the overhead cost for this operation. Even under favorable conditions the return on the investment is sufficiently low to indicate that all of these major cost factors must be precisely evaluated in considering the attractiveness of a specific operation for the electrochemical production of sodium chlorate.

The attached estimate represents an evaluation of Hooker's overall operation as it is expected to be when the expansion currently underway is completed. However, we should bear in mind that this overall operation was derived from an initial installation planned in 1952-53 and constructed in 1953-54 followed by subsequent expansions. Since this time costs have risen more rapidly than has the price of sodium chlorate and hence it is probable that the original installation was based on an anticipated profit slightly larger than what would be realized on the same installation today. Successive expansions could really be justified, however, since the capital investment, operating labor, and overhead charges would be lower on incremental capacity than on the initial capacity. At least a portion of the output of Hooker's Columbus, Miss. plant will be used capitively in the production of perchlorates for military use. MEF, Inc. (a joint venture of Hooker and Foote Mineral) is building a plant for the production of perchlorates adjacent to Hooker's chlorate plant.

Perhaps the best way to summarize these evaluations is with respect to our possible position in chlorate manufacture. With respect to one of the major markets, pulp and paper bleaching, we have a favorable marketing position, particularly in the southeast. Although electrochemical production of sodium chlorate does not present quite as favorable a return on investment as does electrolytic production of caustic and chlorine in our present operations, it does offer an attractive potential. Sodium chlorate represents a logical expansion of the product line of the Industrial Chemicals Division. If the production of sodium chlorate could be carried out at a location where cheap power was

available, where shipping charges on the product to the major consumers would be small, and where other Olin Mathieson operations existed or could be set up, it should represent an attractive venture.

[fol. 974] This reasoning leads to the suggestion of the location at Omal, Ohio. Cheap power is available here, overhead can be reduced by sharing some facilities and services with Ormet, salt should be available at a reasonable cost, and barge shipment of the product down river would reduce freight costs.

Since sodium chlorate and electrolytic chlor-alkali plants use the same prime raw materials (salt and electric power), it might appear contradictory to any that Saltville and McIntosh are logical locations for chlor-alkali plants but probably are not for chlorate plants. It is instructive, therefore, to look at the unit consumptions. For one ton of chlorate, we consume 0.566 tons of salt and 6,000 KWH of electrical power. To produce the same dollar volume of sales from a chlor-alkali plant, the corresponding unit consumptions are 2.076 tons of salt and 4,422 KWH of power. The ideal location for both types of plant is obviously one at which cheapest salt and cheapest power are both available. If, however, a compromise is necessary, it should be made in the direction of cheaper salt for the chlor-alkali plant and cheaper power for the chlorate plant.

R. C. Harshman.

[fol. 975] IN UNITED STATES DISTRICT COURT

PLAINTIFFS' EXHIBIT 23

Received October 7, 1958, B. H. Wojcik.

October 3, 1958.

Dr. W. C. Gardiner, Niagara Falls.
R. S. Fodor, New Haven.

D. W. Ryker
H. E. Boge
B. H. Wojcik

Subject: Vicker-Krebs, Ltd. (Canada) Sodium Chlorate

On October 3, 1958, Mr. Robert B. Spence, Sales Manager of Vickers-Krebs Ltd., P.O. Box 550 Place d'Armes Station, Montreal, Canada, called on me to discuss sodium chlorate. Vickers-Krebs is a joint company between Krebs of France and Vickers of Canada. The company was formed to take advantage of Krebs' know-how and Vickers' experience in manufacturing. Herb Boge had contacted Krebs of Berlin re a sodium chlorate proposal and this request had been relayed to Krebs of France, thence to Vickers-Krebs. Vickers-Krebs is handling the sale and construction of plants in North America.

Unfortunately, Spence was not too familiar with our request for a proposal and so we talked in general terms and agreed on further action. This was that we would send him additional information for his estimate and then he would give us at least a preliminary proposal.

Spence would like us to define more exactly the scope of what we would expect Vickers-Krebs to include. The following questions were raised:

1) Will salt handling equipment be involved or will OMCC bring saturated brine to the battery limits?
2) What is the complete salt analysis?
3) Will OMCC bring water and steam to the battery limits or must these be provided. If OMCC will furnish, Spence would like to know maximum and minimum water temperatures, quantity available, something about the quality, if known, and the steam pressure that will be available.

4) Should Vickers include electric rectification equipment? (The presumption here is that the buyer may prefer to install his own electrical systems to conform to his own requirements. Spence made the statement that it was almost imperative from an economic viewpoint that a chlorate plant be located next to a chlorine facility.)

[fol. 976] 5) Should product storage, packaging and handling facilities be included and if so, how much storage and what kind of shipping containers? (Normally, Spence feels that a battery-limits plant stops at the point where granular product is discharged from the drier.)

Spence will assume a load bearing soil of 3,000 lbs. per sq. ft. I also told him we were interested in 50 tons per day of product.

Vickers-Krebs would provide a turnkey package including start-up. There is no royalty or licensing fee involved.

Spence did offer some information which I offer for your consideration. Not too long ago they bid on a plant for American Potash which was to be a grass-roots plant. It was to have a capacity of 15,000 tons/year and their proposal was $6,000,000. Vickers did not get the job. Spence guessed that a battery-limits plant for 50 tons per day, not including rectification but including salt handling facilities, would cost about $4,000,000.

Spence mentioned that 140 cells were required to produce 10,000 tons per year. These are 15,000 amp. cells at a voltage of 3.2. The anode current density is 0.286 amps. per square inch. They guarantee an 80% current efficiency and usually obtain 83-85%. They use external carbon coolers for the electrolyte. 15 KW as heat must be removed from each cell. Electrolyte leaves the cell at 47°C and is cooled to 43°C.

Graphite consumption is estimated at 22 lbs. per ton but they have realized consumptions as low as 17 lbs. per ton.

Spence claims maintenance is not a problem and indicates that the external cooling feature and the prolific use of PVC in cell construction has resolved most of the old time maintenance problems.

Vickers use what Spence calls a continuous batch system with their cells. Three large feed tanks are used to feed

the brine batchwise t e cells. While one tank is being used, one is being filled and the other is being discharged to the evaporator. At the beginning of a cycle the feed tank is made up to a concentration of 230 gr. of NaCl/liter. This brine is fed to the cells and returned into the same feed tank for about 100 hours. At this point the NaCl concentration drops off to about 120 g./l. At the same time the chlorate concentration has increased but no numbers were given. After the 100 hour cycle is completed, the cells are fed from a fresh feed tank.

[fol. 977] The tank that contains the brine enriched with chlorate is fed to an evaporator and thence to a series of crystallizers and centrifuges, and finally to a drier. The spent brine is returned to the feed tank where it is enriched with brine prior to being returned to the cell cycle.

Spence indicated that spent brine from chlorine cells after proper degasification could be used to feed the chlorate cells.

I would like to suggest that since Spence is located in Montreal, you write him directly, giving him as much information on the questions he raised as you feel you can. You may even want to set some "ground rules" of your own for a proposal. (I want a copy of any correspondence you may have so as to keep informed.)

Spence has promised to furnish a fairly accurate estimate of capital costs and will provide the necessary consumption ratios for you to determine the production cost. He will also provide a schematic flow-sheet.

I hope the above is of some help to you and as soon as we hear from Ugine on this same matter, we will pass it along. We requested Boge to expedite this matter as much as he can.

Best regards.

Original signed by R. S. Fodor

RSF:F
c

[fol. 978] IN UNITED STATES DISTRICT COURT

PLAINTIFFS' EXHIBIT 24

Olin Mathieson Chemical Corporation

November 12, 1958

J. E. Baker, Niagara Falls
W. C. Gardiner, Niagara Falls
New Cell Plant—Vickers-Krebs

C. C. Hightower
B. H. Wojcik
B. H. Nicolaisen
R. S. Fodor

Mr. R. Spence and Dr. M. Zundel of Vickers-Krebs, Montreal, were in my office on November 11th with a turnkey quotation for a sodium chlorate plant. At the completion of our meeting on this subject they showed us pictures of the alkali-chlorine plant that they built for Shawinigan Chemicals. This plant for 50 tons of chlorine and conversion to 50 tons of dry hydrogen chloride has been on stream for six months with everyone happy (according to Spence). The BASF cells operate at 40,000 amperes and have 1 inch backpressure at the cells. Chlorine drying is in a cascade of four tanks each having a motor on the top which throws the sulfuric acid up to contact the gas. An Italian, sulfuric acid sealed, rotary compressor, good for 53 psig, but operating at 35 psig, is used and considered superior to a Nash pump. They used Worthington freon liquefiers which they are not happy about. They have diaphragm type liquid chlorine pumps.

They requested permission to quote on a chlorine plant for us. I gave them all of the pertinent data which I sent Monsanto on July, 1958, except that it was too late to get copies of Dwgs. 5889-A and 9034-C so I gave them the right hand half of Dwg. 7645-A supplemented with some dimensions supplied by phone from Dwg. 9034-C.

They will supply a turnkey price which should be comparable with Monsanto's.

Original Signed By W. C. Gardiner

Received November 14, 1958, B. H. Wojcik.

[fol. 979] IN UNITED STATES DISTRICT COURT

PLAINTIFFS' EXHIBIT 25

Olin Mathieson Chemical Corporation
Industrial Chemicals Division

Research and Development Department

H-35.507 Electrochemical Survey Report
General Subject: H—Miscellaneous Inorganic Chemicals

Name	Res. Mgr.	Super.	Work By	Report By	
B. H. Wojcik					Chg. No. 743-2010
B. H. Nicolaisen					
W. C. Gardiner	X	X			Report Dated: 12/11/58
A. J. Holmes					
H. A. Bruson			X	X	Report Typed: 1/8/59:CB
Library					
G. D. Brykit					
S-R. C. Harshman					
S-T. H. Dexter					
S-C. M. White					
S-B. H. Wojcik					
S-G. K. Weisse					
S-R. M. Thomas					
S-C. W. MacMullen					

Comparison of Vickers-Krebs and Pechiney Sodium Chlorate Plants

Signed: A. J. Holmes. Approved: W. C. Gardiner

Date: Jan. 13, 1959. Date: Jan. 13/59

[fol. 980] Table of Contents

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B. Pechiney Plant	7
V. Unit Consumption Comparison and Production Cost Estimate	8
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Attachments
Table I, II, III, and IV
Figures 1 and 2

[fol. 981] I. Summary

A turnkey construction proposal for a 40 ton per day sodium chlorate plant has been received from Vickers-Krebs Ltd. of Canada. Cost of this plant is $3,197,000 on a prepared site. Production cost of $NaClO_3$ in this plant would be $91.61/Ton $NaClO_3$. Return on the above Investment would be 13.4% with a Pay-Out period of 5 years.

The Vickers-Krebs plant is compared with a plant proposed by Pechiney of France. No firm investment figure is available on this plant so comparison is limited to unit consumptions. Exclusive of costs involving investment, i.e. raw materials, utilities, labor, etc., the Pechiney costs are $1.50 per ton $NaClO_3$ higher than the same costs for the Vickers-Krebs plant.

[fol. 982] II. Objective

This survey was made to compare sodium chlorate plants proposed by Vickers-Krebs Ltd. of Canada and Pechiney of France.

III. Introduction

A chlorate plant description was received from Pechiney by S. J. Wommack on January 21, 1957. A turnkey proposal for a chlorate plant at Saltville, Va. was made to W. C. Gardiner on December 1, 1958 by Vickers-Krebs Ltd. This report will compare the two plants from an economic point of view.

IV. Plant Description

A. Vickers-Krebs Plant

A 40 ton per day sodium chlorate plant was described to W. C. Gardiner, R. C. Harshman and A. J. Holmes of Olin Mathieson by R. B. Spence and Dr. M. Zundel of Vickers-Krebs Ltd. of Canada. Krebs has constructed 17 sodium chlorate plants throughout the world since 1925 and is now building a plant in Finland utilizing a 30,000 ampere cell. A process flow diagram is given in Figure 1. A general description of the proposed plant is as follows:

Cells

100 Monopolar cells rated at 30,000 amperes in two banks using perforated steel cathodes and impregnated graphite anodes.

Brine Purification

Facilities for brine treatment, filtration and storage (100 hrs. cell operation).

Brine Post-Treatment

Facilities for removing hydrogen, sludge, and hypochlorite from brine containing sodium chlorate.

Sodium Chloride Recovery

Facilities for the evaporative concentration of sodium chlorate and the continuous cystallization and removal of sodium chloride crystals.

Sodium Chlorate Recovery

A vacuum crystallizer, crystal growing type, with a capacity of 45 tons a day of sodium chlorate crystal. Crystals can be produced in different sizes. The equipment is designed for crystals between 60 mesh and 1/16" at rated capacity. The sodium chlorate is recovered on a continuous centrifuge and is dried in an indirect gas fired rotary dryer.

[fol. 983] The plant is completely instrumented.

Buildings

Building of structural steel frame and corrugated asbestos board siding. All ground floors sloped to sewers for easy washing. Natural ventilation is used in the cell and evaporator sections. Forced ventilation is used in the packing area and in the rectifier room. Space heaters are used to provide heat throughout the plant. The cell building is one story 60′ x 160′ x 25′ high. At one end is an office, laboratory, and rectifier room. At the other end is the lockers and lavatory. The crystallizing building is three stories 70′ x 30′ x 65′ high. The drying and packaging building is two stories 70′ x 30′ x 50′ high. The pump and filter room for brine treatment is two stories 30′ x 30′ x 25′ high.

Power Distribution

Power for all purposes will be supplied in one location at 13.8 KV.

Rectifier

Water cooled mechanical rectifiers having onput of 30,000 amperes continuous; 5% overload continuous 375 volts maximum, and continuous automatic load regulation.

The utility requirements of the plant are as follows:

A.C. Power, 13.8 KV

Total Installed power 12,500 KW
Normal continuous load 10,750 KW

Cooling Water

River Water—Reusable

Consumption at 60°F.	2400 GPM
at 80°F.	3500 GPM

Brine

Brine with the following analysis:

NaCl	300 g/l
SO_4=	3.2-3.7 g/l
Ca++	0.7-1.5 g/l
Mg++	0.1 g/l

[fol. 984]

Average Consumption	18,000 gal/day
Instantaneous output	50 GPM

Oil

Bunker C

Summer	3.7 tons/day
Winter	5.4 tons/day

Raw material consumptions per ton of $NaClO_3$ produced for the plant are listed as follows:

Power		
	A.C. Power for electrolysis measured on 13.8 KV inlet	KWH 6100
	A.C. Power for other utilities	KWH 200
Steam		
	at 150 PSIG	
	for process	lbs. 2750
	for heating	lbs. 250
Brine		Gal. 460
HCl	22° Bé	lbs. 50
NaOH	50%	lbs. 4
Soda Ash		lbs. 10
Barium chloride		lbs. 32
Graphite (treated, dense quality)		lbs. 23
Fuel Consumption (Bunker C)		lbs. 185

The personnel requirements for the plant are as follows:

Operating Labor		Total Force
Cell Room	1 Operator/shift 7 day/week	4
Concentration, Crystallization, Drying	1 operator/shift 7 day/week	4
Handling, Bagging Moving of Drums	3 men, daytime only 5 day/week	3
[fol. 985]		
Brine Preparation	1 man, Daytime only 5 day/week	1
Supervision		
Plant Engineer *	½ Day	½
Chemist *	½ Day	½
Instrument Repair *	1-2 hrs. day	1/5
Foreman	1 per shift, 7 day/week	4
Maintainance		
Supervision *	1 Foreman, Half-day	½
Cell Rebuilding	2 men, daytime only	2
Routine Maintainance Graphite Preparation Electrician	5 day/week 1 man, daytime only 5 day/week + standby for emergency	1
Mechanic	1 man, daytime only 5 day/week	1
Storekeeper *	1 Man half-day occupation	½

* Personnel to be shared with other production facilities.

Vickers-Krebs estimates that this plant would cost $3,197,000 for a turnkey job. This proposal includes the design, engineering, supply, erection and startup supervision for a nominal 40 tons sodium chlorate per day on a level site at an existing plant.

B. Pechiney Plant

The Pechiney process in France starts with sea water to obtain sodium chloride solution which is not as pure as that used for caustic and chlorine plants. The concentration of the NaCl is 250 gms/liter, which is near the saturation concentration at −10°C. This solution is passed through two parallel banks of cells. Pechiney presently is using 3,000 ampere cells; however, they have tested an 18,000 ampere cell for over a year and found it quite satisfactory. The solution leaving the cells contains about 150 g/l NaCl. This is increased to 250 g/l by addition of solid salt. The solution is cooled

[fol. 986] to —10°C. and centrifuged at that temperature to remove the sodium chlorate crystals. The solution from the centrifuge, containing 250 g/l NaCl, and saturated with $NaClO_3$ is recirculated through the cell. A schematic flow diagram is shown in Figure 2.

The unit consumptions per ton of sodium chlorate produced are given as follows:

Salt	.64 Ton
Graphite	13.2 lb.
Cr_2O_7	.88 lb.
Steam (exclusive of building heating)	None
Bunker C Fuel Oil	185 lb.
Power (A.C.)	450 KWH
Electrolytic (A.C.)	6200 KWH
Labor	
Operating	3.58 MH
Supervision	1.0 MH
Repair	
Labor	.42 MH
Materials	$.60

V. Unit Consumption Comparison and Production Cost Estimate

A comparison of the unit consumptions of the Vickers-Krebs and Pechiney chlorate plants is as follows:

Units per short ton $NaClO_3$

	Vickers-Krebs	Pechiney
Salt, Ton	.574	.64
Graphite, lb.	23	13.2
HCl, 22°Bé, lb.	50	.88
Cr_2O_7, lb.	2.7	.88
Steam, lb.	3,000	None
Power (A.C. KWH)	200	450
Electrolytic (A.C. KWH)	6100	6200
Labor		
Operating, M.H.	1.78	3.58
Supervision, M.H.	.75	1.0

[fol. 987]

Repair		
Labor, M.H.	.64	.42
Materials	.80	.60

The unit costs for the above items used in making a production cost estimate for the Vickers-Krebs plant were derived from the following sources:

The investment is that sum proposed by Vickers-Krebs and does not include any expense incurred by OMCC in site preparation.

Brine, HCl, Fuel Oil, Steam, Power, Labor, Maintainance, Maintainance Overhead, Taxes and Indirect Overhead costs were given to W. C. Gardiner in a letter dated 2/12/57 from G. F. Comer. Labor rates in this estimate have been increased 5%.

Graphite costs were based on National Carbon prices for impregnated graphite.

Cr_2O_7, NaOH, Na_2CO_3 and $BaCl_2$ unit costs were taken from a current Oil, Paint and Drug Reporter. Maintainance materials was figured as ½ Maintainance labor costs.

Transportation charges were based on NaOH shipping charges of $5/T and 40 ton sodium chlorate tank cars. Freight equalization is based on equalization from Columbus, Miss. and delivery to paper mills in quantities and locations supplied by John J. Hayes in a Sodium Chlorate Market Research Report dated December 1956.

Freight rates were supplied by J. J. Kerr, December 5, 1958 as shown in Table IV.

Figure 3 is a Production Cost Estimate for making sodium chlorate at Saltville in the proposed Vickers-Krebs plant. Figure 4 is the Financial Criteria Sheet for the above mentioned plant. A production cost estimate was not made for the Pechiney plant because there are no firm figures on the cost of such a plant.

VI. Conclusions

The Vickers-Krebs plant seems to be the orthodox chlorate plant as is presently used in this country. The investment for this plant however, seems to be about $1-2,000,000 lower than estimated by OMCC in previous reports. Production cost for sodium chlorate is $91.61/T at a plant located at Saltville. This price includes freight equalization from Columbus, Mississippi, the location of existing chlorate plants. Return on an investment of $3,197,000 is 13.4% with a payout period of 5 years.

[fol. 988] The Pechiney plant uses a refrigeration method for separating chlorate from chloride. This operation, to the best of our knowledge, is not used in this country. Production costs for items other than those involving investment are about $1.80 per ton $NaClO_3$ higher for the Pechiney over the Vickers-Krebs plant. This increase in cost, however, may not be indicative of total production cost when the investment in the Pechiney plant is known.

VII. Recommendations

It is recommended that further negotiations be carried out with Pechiney in order to get plant specifications from which a capital investment estimate can be made. This investment will be necessary in order to fully compare the two plants described in this report.

Studies should be continued to find the best possible location for a chlorate plant.

Experimental work should be continued on improved chlorate cell development.

Attachments

Figure 1	Flowsheet, Vickers-Krebs Sodium Chlorate Plant
Figure 2	Pechiney Chlorate Process
Table I	Streams Through Chlorate Plant Vickers-Krebs Sodium Chlorate Plant
Table II	Production Cost Estimate Sodium Chlorate in Vickers-Krebs Plant
Table III	Financial Criteria Sheet, 40 T/day $NaClO_3$, Vickers-Krebs Plant, Saltville, Va.
Table IV	Freight Equalization Table

Table I

Table I

VICKERS-KREBS SODIUM CHLORATE PLANT

STREAMS THROUGH CHLORATE PLANT

		NaClO3	NaCl	H2O
1.	Product	3,335	0.7	4	4
2.	Wet crystals	3,335	0.7	4	51
3.	Water from drier				30
4.	Wash water				711
5.	Recycle from crystalliser total	4,322	46	296	4,665
6.	Water from crystalliser				800
7.	Feed to crystalliser	7,657	46.7	300	4,805
8.	Salt slurry	100	1	1,348	60
					+ 2,410 (condensate)
9.	Water from evaporator				7,437
10.	Feed to evap.	7,757	47.7	1,648	12,332
11.	Product of cells	5,596	24.	1,500	10,000
12.	Recycle from crystalliser	2,161	23.3	148	2,332
13.	Recycle to brine plant	2,161	23.3	148	2,332
14.	Fresh brine			1,844	5,520
15.	Recycle to cells	891,000	3,580	215,600	1584,000 (4000 US GPM)
16.	Modifications in cells	+ 3,335		- 1,840	- 1,524

All figures in lbs. per hour

[fol. 990]

H-35.507 (AJH) Table II

PRODUCTION COST ESTIMATE

ESTIMATE NO. _____ PRODUCTION OF Sodium Chlorate in Vickers-Krebs Plant
BY A.J.H. PRODUCTION RATE 40 T $NaClO_3$/day SERVICE FACTOR 100 %
DATE 12/8/58 LOCATION Saltville, Va. COSTS PER M2. (TERM) , Ton (UNIT)

INVESTMENT $2,450,000 less Equipment $1,450,000	UNIT	UNIT PRICE	UNITS PER TERM	UNIT CONSUMPTION	ITEM COST PER TERM	GROUP COST PER TERM	ITEM COST PER UNIT	GROUP COST PER UNIT
RAW MATERIALS								12.39
Brine (Purified)	ton	$.70		.574			.403	
HCl	lb.	$.007		50			.35	
Graphite	lb.	$.335		23			7.70	
CaO_3	lb.	$.30		2.8			.81	
NaOH (50%)	lb.	$.014		4			.06	
Na_2CO_3	lb.	$.019		10			.19	
$BaCl_2$	lb.	$.09		32			2.88	
UTILITIES								44.97
FUEL Bunker C	lb.	$.015		185			2.77	
STEAM 1000	lb.	$.50		3			1.50	
POWER	KWH	$.0060		200			1.20	
WATER								
AIR								
Electrolytic	KWH	$.0065		6100			39.50	
LABOR								6.29
OPERATING	M.H.	2.10		1.78			3.74	
MONTHLY	M.H.	3.40		.75			2.55	
OVERHEAD								
REPAIR & MAINT.								2.30
LABOR	M.H.	2.00		.64			1.28	
MATERIALS							.64	
OVERHEAD	30% Labor						.38	
SUPPLIES & MISC.								.50
LABORATORY								
TRANSPORTATION Tank Cars at $3.50/T								3.50
TOTAL OPERATING COST								57.56
DEVELOPMENT								
OVERHEAD								17.56
DIRECT Figured as Monthly Labor								
INDIRECT $65,000/Yr.							4.45	
TAXES & INSURANCE 1% Inv./Yr.							1.81	
DEPRECIATION 6.67% Inv/Yr.							11.30	
MANUFACTURING COST								75.12
PRODUCTION COST								87.51

INVESTMENT Rept: $4,454,000 less, $2,152,000 land	UNIT	UNIT PRICE	UNITS PER TERM	UNIT CONSUMPTION	ITEM COST PER TERM	GROUP COST PER TERM	ITEM COST PER UNIT	GROUP COST PER UNIT
RAW MATERIALS								12.39
Brine(Purified)	ton	$.70		.574			.403	
HCl	lb.	$.007		50			.35	
Graphite	lb.	$.335		23			7.70	
CaO_3	lb.	$.30		2.7			.81	
NaOH(50%)	lb.	$.014		4			.06	
Na_2CO_3	lb.	$.019		10			.19	
$BaCl_2$	lb.	$.09		32			2.88	
UTILITIES								44.97
FUEL Bunker C	lb.	$.015		185			2.77	
STEAM 1000	lb.	$.50		3			1.50	
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LABOR								6.29
OPERATING	M.H.	2.10		1.78			3.74	
MONTHLY	M.H.	3.40		.75			2.55	
OVERHEAD								
REPAIR & MAINT.								2.30
LABOR	M.H.	2.00		.64			1.28	
MATERIALS							.64	
OVERHEAD	30% Labor						.38	
SUPPLIES & MISC.								.50
LABORATORY								
TRANSPORTATION Tank Cars at $3.50/T								3.50
TOTAL OPERATING COST								57.56
DEVELOPMENT								
OVERHEAD								17.56
DIRECT Figured as Monthly Labor							-	
INDIRECT $65,000/Yr.							4.45	
TAXES & INSURANCE 1% Inv./Yr.							1.81	
DEPRECIATION 6.67% Inv/Yr.							11.30	
MANUFACTURING COST								75.12
PRODUCTION COST								87.51
CREDIT FOR BY PRODUCTS Freight Equalization								4.35
NET PRODUCTION COST								91.86
NOTES								

Table III

FINANCIAL CRITERIA SHEET

40 T/day $NaClO_3$

Wickers-Krebs Plant, Saltville, Va.

Investment	$3,197,000
Gross Sales	$2,350,000
Deduct	
Cost of Mfgr. (14,600 T at $91.86/T)	$1,340,000
Sales Expense (5% of Gross Sales)	118,000
	$1,428,000
Gross Profit	892,000
Income Tax (52%)	464,000
Net Income	428,000
Return on Investment	13.4%
Pay-Out Time	5 yrs.

Table IV

FREIGHT EQUALIZATION TABLE

Location	Tons $NaClO_3$ per Day	Saltville, Va.	Columbus, Miss.	$/yr. Frt. Equal. to Columbus, Miss
Alabama				
Brewton	6	99	65	14,900
Coosa Pines	2	82	55	3,950
Demopolis	5	93	42	18,600
Mobile	3-1/2	105	61	11,200
Naheola	3	96	48	10,500
Arkansas				
Crossett	2	116	71	6,600
Pine Bluff	8	110	71	22,700
Florida				
Ferrandina	1-1/2	96	92	4,400
Foley	6	99	83	7,000
Palatka	3	102	93	1,970
Georgia				
Brunswick	2	92	88	580
Jesup	10	88	87	730
St. Marys	5-1/2	98	95	1,200
Louisiana				
Bastrop	3	116	67	10,800
Springhill	3	122	77	9,800
Monroe	6	116	67	21,500
Maine				
Great Works	2	136	174	0
Lincoln	4	138	179	0
Maryland				

Location	Tons $NaClO_3$ per Day	Saltville, Va.	Columbus, Miss.	$/yr. Frt. Equal. to Columbus, Miss
Alabama				
Brewton	6	99	65	14,900
Coosa Pines	2	82	55	3,950
Demopolis	5	93	42	18,600
Mobile	3-1/2	105	61	11,200
Nahecla	3	96	48	10,500
Arkansas				
Crossett	2	116	71	6,600
Pine Bluff	8	110	71	22,700
Florida				
Ferrandina	1-1/2	96	92	4,400
Foley	6	99	83	7,000
Palatka	3	102	93	1,970
Georgia				
Brunswick	2	92	88	580
Jesup	10	88	87	730
St. Marys	5-1/2	98	95	1,200
Louisiana				
Bastrop	3	116	67	10,800
Springhill	3	122	77	9,800
Monroe	6	116	67	21,500
Maine				
Great Works	2	136	174	0
Lincoln	4	138	179	0
Maryland				
Luke	3	85	127	0
Michigan				
Filer City	2	108	122	0
Mississippi				
Moss Point	3	108	65	9,600
Natchez	7	115	63	26,500

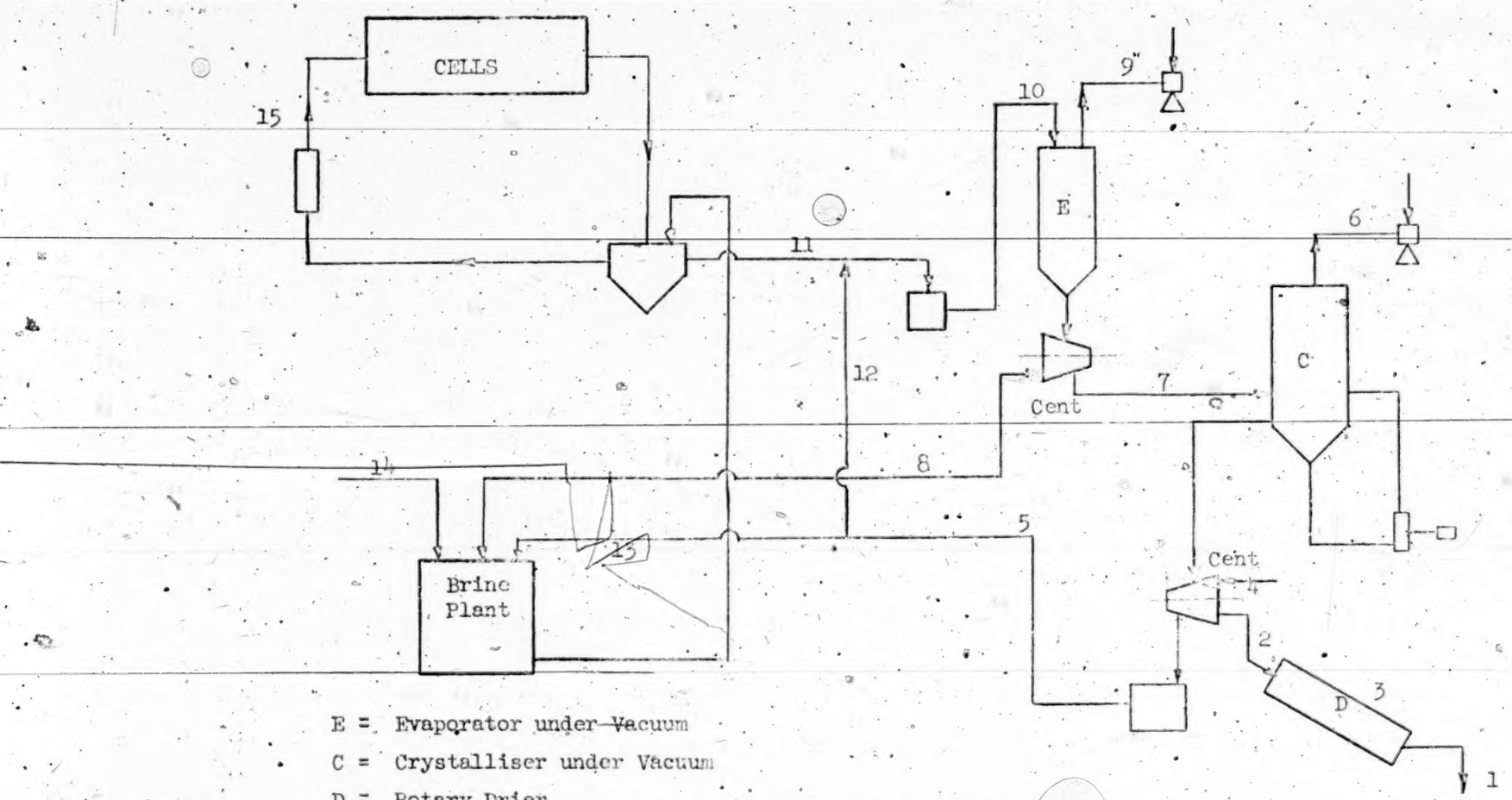
Table IV

FREIGHT EQUALIZATION TABLE

Location	Tons $NaClO_3$ per day	Saltville, Va.	Columbus, Miss.	$/yr. Frt. Equal. to Columbus, Miss
New York				
Ticonderoga	1	118	158	0
North Carolina				
Acme	8	83	108	0
Canton	6	57	88	0
Pennsylvania				
Spring Grove	4	82	127	0
Tyrone	2	89	132	0
Texas				
Evadale	4	133	89	12,800
Lufkin	2	132	89	6,300
Pasadena	4	139	98	7,100
Virginia				
Covington	4	62	115	0
Franklin	4	72	118	0
Wisconsin				
Nekoosa	2	126	121	730
	131.5			209,460

Calculation of Freight Equalization per ton $NaClO_3$.

$$\text{Freight Equalization/T } NaClO_3 = \frac{(40 \text{ T/day Prodn}) (\$209,460)}{(131.5 \text{ T/day Total Market}) (40)(365)} = \$4.35 \text{ per ton } NaClO_3$$



E = Evaporator under Vacuum

C = Crystalliser under Vacuum

D = Rotary Drier

Figure 1 FLOW SHEET, VICKERS-KREBS SODIUM CHLORATE PLANT

Figure 1

Figure 2 PECHINEY CHLORATE PROCESS

Figure 2

[fol. 997] IN UNITED STATES DISTRICT COURT

PLAINTIFFS' EXHIBIT 27

Olin Mathieson Chemical Corporation
Industrial Chemicals Division

Research and Development Department

H-35.508 Electrochemical Survey Report
General Subject: H—Miscellaneous Inorganic Chemicals

Name	Res. Mgr.	Super.	Work By	Rep. By	
B. H. Wojcik					Chg. No. 743-2010
B. H. Nicolaisen					
W. C. Gardiner	X	X			
H. A. Bruson					Report Dated: 1/9/59
A. J. Holmes			X	X	
G. D. Byrkit					Report Typed: 1/20/59:CB
Library					
S-R. C. Harshman					
S-T. H. Dexter					
S-C. M. White					
S-B. H. Wojcik					
S-R. M. Thomas					
S-G. K. Weisse					
S-C. W. MacMullen					

Economic Location of Sodium Chlorate Plant

Approved: W. C. Gardiner. Signed: A. J. Holmes.
Date: 1/21/59. Date 1/20/59.

[fol. 998] Table of Contents

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II.	Objective	3
III.	Introduction	3
IV.	Optimum Plant Location at Existing Facility	3
V.	Comparison of "Grass Roots" Plant with Existing Facility	4
VI.	Conclusions	4
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Attachments

Table I	OMCC Chemicals Division Unit Costs
Table II	Dollars per Year Freight Equalization from Columbus, Miss. Needed for OMCC to Supply the Listed Consumers
Table III	Added Investment Required for "Grass Roots" $NaClO_3$ Plant
Table IV	Production Cost Estimate, $NaClO_3$ at TVA Area
Table V	Production Cost Estimate, $NaClO_3$ at Saltville, Va.
Table VI	Financial Criteria Sheet, Saltville and TVA Area
Figure 1	Unit Costs and Their Effect on Sodium Chlorate Production Cost
Figure 2	Map of Sodium Chlorate Consumers

[fol. 999] I. Summary

A study has been made to determine the most economic location for a sodium chlorate plant selling to paper mills for chlorine dioxide bleaching. Considering both freight rates and production costs Saltville, Va. seems to be the best location should the plant be built at an existing OMCC Chemical Division plant. Estimates have been made for a "grass roots" plant in a low cost power area. Production costs for such a plant are about the same as for Saltville but the investment will be higher. Further information gathering on a "grass roots" plant is indicated.

[fol. 1000] II. Objective

The object of this survey was to determine the optimum location for a plant selling sodium chlorate to paper mills for chlorate dioxide generation for bleaching.

III. Introduction

A turn-key proposal for a chlorate plant at an existing OMCC facility has been received from Vickers-Krebs Ltd. of Canada. Using these figures to determine investment requirements with unit costs and freight rates to determine production costs, the optimum location for a chlorate plant can be made. A comparison is also made between the best location at an existing OMCC facility and a "grass roots" plant.

IV. Optimum Plant Location at Existing Facility

Unit costs for several of the Industrial Chemicals Division plants have been transmitted to W. C. Gardiner by G. F. Comer in a letter dated 2/12/57. These unit costs are not out-of-pocket costs and, therefore, the results which are obtained by their use would be improved when the plant is integrated into an existing facility. Some of the more important unit costs are given in Table I. The effect of these unit costs on sodium chlorate production cost is shown in Figure 1.

Potential customers for sodium chlorate are paper mills using chlorine dioxide for bleaching pulp. A list of these consumers and their daily requirements are given in a Mar-

ket Research Report on Sodium Chlorate dated December 1956 by John J. Hayes. A list of these consumers is given in Table II and their geographic location is shown on the map in Figure 2.

Freight rates from various producing points to chlorate customers have been obtained from J. J. Kerr of the Baltimore office on 12/5/58. These rates apply to the shipment of sodium chlorate in tank cars. They are given in Table II. Calculations were made to equalize these freight rates on Columbus, Mississippi where Hooker and American Potash have chlorate plants. These freight equalization values are given in Table II. Also listed in Table II is the number of tons per day of sodium chlorate that could be shipped from an OMCC plant where freight rates would be lower than that from Columbus, Miss. In some cases this is equal to or greater than the plant capacity so the need for consideration of freight equalization in these plant locations may be unnecessary. This is a question that can best be answered by the product manager.

Based on unit production costs from Table I and Figure 1 Saltville gives the lowest production cost. Lake Charles is second but is approximately $9/Ton higher. Next is McIntosh $14/Ton higher with Brunswick being $30/Ton higher. Whether freight equalization is considered or not, Saltville seems to be the logical location for a sodium chlorate plant.

[fol. 1001] V. Comparison of "Grass Roots" Plant With Existing Facility

A "grass roots" chlorate plant should be considered because it could be placed in a location, TVA area for instance, where the power rates are substantially lower than those found at an existing OMCC plant. A "grass roots" plant however would require a higher investment for construction of offices, repair shops, etc. that would otherwise be available at an existing plant. An estimate of the additional capital required is given in Table III. These figures are based on estimates made by Blaw-Knox in 1951 for the McIntosh plant. Factoring up to present day costs the added investment is $670,000. It should be remembered that this is a very rudimentary estimate.

Average power costs in the TVA area were given as $0.00421/KWH in the Jan. 3, 1959 issue of Chemical Week.

A production cost estimate was made for a "grass roots" plant based on the above information and is given in Table IV. An estimate for producing sodium chlorate at Saltville is also included for comparison in Table V. Financial Criteria for the two plants are given in Table VI. Production cost of sodium chlorate at Saltville is $88.18/Ton and is $87.81 or practically the same at a "grass roots" plant. Return on Investment for the Saltville plant is 14.2% and is 11.7% at a "grass roots" plant as shown in Table VI.

Because of the economic closeness of the Saltville and "grass roots" plants it is recommended that further information be gathered on a "grass roots" plant. Freight equalization might even make such a plant more attractive. Vickers-Krebs could supply the necessary investment requirements. Prevailing unit costs for the TVA area should be procured.

VI. Conclusions

1. Saltville, Va. is the most economic location for a sodium chlorate plant should it be built at an existing OMCC Chemicals Division facility.

2. A "grass roots" plant in the TVA area would require more investment than a plant located at an existing facility; however, such a plant might be more economical because of lower freight equalization and lower power cost.

VII. Recommendations

1. It is recommended that Vickers-Krebs be asked to provide an estimate for the necessary facilities required by a "grass roots" chlorate plant.

2. Unit costs of salt, labor and electricity should be obtained for various points in the TVA area.

3. The economics of a "grass roots" plant should be reviewed after the above information is obtained.

[fol. 1002] 4. The sodium chlorate market picture should be brought up to date before any decisions are made on the size and location of a sodium chlorate plant.

5. Work should be continued on development of improved sodium chlorate production technology.

[fol. 1003] IN UNITED STATES DISTRICT COURT

PLAINTIFFS' EXHIBIT 28

February 11, 1959.

Copies: B. H. Wojcik (3)
B. H. Nicolaisen
A. J. Holmes
G. D. Byrkit

Memorandum

Sodium Chlorate—Vickers-Krebs

Conference in offices of Canadian Vickers Limited, Montreal, February 10, 1959.

Present: Mr. Richardson, President, Canadian Vickers Ltd., Mr. Russell Thoman, General Manager, Canadian Vickers Ltd., Mr. Robert B. Spence, Sales Manager, Canadian Vickers Ltd., Dr. M. Zundel, Vickers-Krebs Ltd., Mr. B. H. Nicolaisen, Olin Mathieson Chemical Corporation, Dr. W. C. Gardiner, Olin Mathieson Chemical Corporation.

We presented Vickers-Krebs with a photostat of Chemical Age article "Bright Future for I.C.I.'s Newly Developed Electrodes", January 3, 1959, page 9. We also gave them recent literature from Crucible Steel describing the use of platinized titanium anodes for cathodic protection of ships.

This literature was used to illustrate the fact that ICI has published information disclosing that platinized titanium is useful for chlorine and chlorate anodes. We told them that this literature had been distributed to the Chlorine Institute and that ICI had made numerous contacts by letter endeavoring to promote the use of platinized titanium anodes in the chlorine industry. We told them that ICI had offered us cooperative assistance but had recently chosen to restrict their offer. We further told them that ICI was not sure of their patent position but that we were assuming that they might obtain a good patent for their development. We had done successful experimental work to confirm their claims on the usefulness of the material but had extended the work to find other materials besides titanium which are useful for the purpose. We were particularly impressed with the possibility of platinized titanium for chlorate cells because of low voltage, high temperature, freedom from anode re-

placement and low hydrochloric acid consumption. We would continue to develop the base metal such as titanium or its substitutes also the platinum plating techniques. Application to the chlorate cell would be the objective of a joint development program which we had come to Montreal to discuss.

Our management is anxious to get into the chlorate business and are interested in the Vickers-Krebs proposal for a chlorate plant but feel that they cannot afford to overlook the possibility indicated for operation with platinized titanium anodes. We told them that Mr. Block had instructed us to find out if they were willing to give us their know-how in constructing and developing a chlorate cell in exchange for rights to exploit the cell which might be developed.
[fol. 1004] They indicated that they were sufficiently interested to discuss further any suggestions we had for carrying out the proposal.

We told them that we had developed a number of ideas which had been discussed with only one other member of our organization. These ideas were entirely our own and we had not had the opportunity of discussing them with our top management, however we thought that they were in the spirit of our instructions and would serve as points to be discussed by both parties. The points as suggested to Vickers-Krebs are itemized as follows:

1. This development would be for chlorate cells only.
2. Olin Mathieson would pilot a 190 KW cell and give Vickers-Krebs results of test.
3. OM would take out U.S. patents.
4. OM would take out and maintain foreign patents in countries to be mutually agreed upon.
5. VK and OM would cooperate on prosecution of U.S. and foreign patents.
6. OM would not disclose to a third party except for patent purposes any confidential information obtained from VK.
7. VK would have exclusive rights to build, sell or operate under said patents outside USA.
8. OM would grant non-exclusive licenses to VK plants in USA on same terms as any other licensee.
9. If a continuing exchange of information is agreed upon then OM would have to ask that any new development by

Krebs related to chlorate cells with non-graphic anodes for 5 years after development under this agreement stops would be licensed to OM on royalty-free basis.

Discussion of Suggested Points of Agreement

Vickers is willing to consider not only chlorate but mercury cell development. I pointed out that we already were tied up with Blaw-Knox on mercury cell licensing so that at this time chlorate only could be considered.

Vickers-Krebs considers that the only reasonable basis for rapid development would be through continued consulting services during the progress of the development. They have a great deal of information not incorporated in their present cell and process which might be of value to the new cell and its operating conditions which would develop during the progress of the development.

[fol. 1005] They had no objections to our patent proposals.

Point No. 8 was not to their liking and they thought that a reversal of the parties might make it acceptable, namely "Vickers-Krebs would grant non-exclusive licenses to OM clients in US on same terms as any other licensee". We did not express our opinion on this other than that we would consider it further. VK would like to have some assurance that plants built in USA would be built by VK since this is their primary business.

We amplified our thinking behind point No. 9 by explaining that we needed protection from the possibility of Krebs et Cie developing in other directions from our platinized titanium work but stimulated by this work. We had suggested 5 years as a reasonable time during which we might want the protection. Mr. Thoman thought that this might be too long but agreed with it in principle.

VK thought that one principle had not been covered in the points suggested by us. VK places some value on their know-how and this is all that they have to sell in their chlorate cell proposal. They see the possibility that the first plant by Mathieson might be the only plant which they have the oportunity of building and they think that they should receive some compensation for their know-how. They point out that OM would obtain benefits from the development and their know-how by continuing profitable operations. They would like to see some immediate compensation to them

for the know-how that they would contribute. They might want to suggest some royalty basis or some lump sum figure. It is obvious that they have no dollar value for their know-how. At an earlier conference Mr. Spence stated that if he asked 6 members of their Company for an expression of this value he would get 6 different answers.

Mr. Thoman asked whether we favored a lump sum royalty or continuing payments. We said that we had experience with both but he indicated that most people favored lump sums.

Conclusions

VK is favorably disposed towards working with us. It is necessary to check with other interested parties in their organizations, probably Krebs. They will give us their decision just as soon as they possibly can which they assure us will be before the end of February.

W. C. Gardiner.

WCG:CB

[fol. 1006] IN UNITED STATES DISTRICT COURT

PLAINTIFFS' EXHIBIT 29

Feb. 16, 1959.

Dr. W. C. Gardiner, Niagara Falls
Dr. B. H. Wojcik, Baltimore

Mr. B. H. Nicolaisen
Mr. E. Block

Sodium Chlorate Vickers-Krebs

Your conference notes pertaining to the meeting on Sodium Chlorate at Vickers-Krebs in Montreal, were discussed with Mr. Block.

The first question raised by Mr. Block concerns the size of the cell. He wants to make sure we will work on a cell which, when proven out, will be applicable to commercial production.

In lieu of the nine points listed in your report, Mr. Block suggests we substitute the following:

1) Any cells built for OMCC as a result of this joint study will be free of any royalty.

2) Royalty charges for any cell built for anyone else, because of "know-how" or patents resulting from the joint effort, will be split equally between OMCC and Vickers-Krebs.
3) OMCC will not be obligated to spend in excess of (x) dollars on the joint effort.
4) Vickers-Krebs will not be obligated to spend in excess of (y) dollars on the joint effort.

The amount of money to be spent by OMCC will be set as soon as we have an estimate of the total development cost. In no event are we to make any commitments which have not been cleared through the Baltimore office and especially through the legal department.

B. H. Wojcik.

BHW:feg

[fol. 1007] IN UNITED STATES DISTRICT COURT

PLAINTIFFS' EXHIBIT 31

Olin Mathieson Chemical Corporation
Industrial Chemicals Division

Research and Development Department

H-35.509 Electrochemical Survey Report
General Subject: H—Miscellaneous Inorganic Chemicals

Name	Res. Mgr.	Super.	Work By	Rep By	Chg. No.: 743-2011
B. H. Wojcik					
B. H. Nicolaisen					
W. C. Gardiner	X	X			Report Dated: 2/25/59
H. A. Bruson					
A. J. Holmes			X	X	Report Typed: 4/4/1459:CB
G. D. Byrkit					
Library					
S-R. C. Harshman					
S-T. H. Dexter					
S-C. M. White					
S-B. H. Wojcik					
S-R. M. Thomas					
S-G. K. Weise					
S-C. W. MacMullen					

Geographic Survey of Electricity Cost for Sodium Chlorate Plant

Approved: W. C. Gardiner. Signed: A. J. Holmes.

Date: 4/13/59. Date: 4/9/59.

[fol. 1008] Table of Contents

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Conclusions 5
Recommendations 5

Table I Minimum Electrical Energy Charges in Southeastern U. S.
Table II Low Power Rate Locations in Southeastern U.S.
Table III Power Rates at OMCC Chemicals Division Plants

[fol. 1009] Summary

Electricity costs for a 40 ton per day sodium chlorate plant in southeastern U.S. have been reviewed. Electric power costs at Saltville, Va., McIntosh, Ala., and Lake Charles, La. are about the same, 6.1 mils per KWH. TVA power costs are the lowest in the area 4.17 mil per KWH, and are the same throughout the TVA area. The production cost in the TVA area for sodium chlorate is 12% lower than at Saltville or McIntosh based on electricity costs.

[fol. 1010] Objective

This survey was made to determine electrical power rates at various locations for a 40 ton per day sodium chlorate plant in southeastern United States.

Introduction

Electric power represents about 30% of the production cost of sodium chlorate, therefore, it is important that the cost of electricity be given every consideration in the location of a sodium chlorate plant. Electricity costs at existing OMCC Chemicals Division plants are not the lowest rates available in southeastern U.S. so this study was made to determine where the minimum cost power is located.

The expenses incurred in purchasing electric power are broken down into two groups, demand charge and energy charge. Demand charge is the minimum rate paid per month for the contracted amount of kilowatts needed to operate the plant. The energy charge is based on the actual number of kilowatt hours of electricity used per month.

Discussion

The power requirements for a 40 ton per day sodium chlorate plant were given in a proposal received from Vickers-Krebs. The plant uses 6100 KWH/ton $NaClO_3$ for electrolytic power and 200 KWH/ton $NaClO_3$ for auxiliaries. The demand load for these power requirements is 10,500 KW. The plant would use 7,580,000 KWH per month.

The National Electric Rate Book has been obtained from the Federal Power Commission. This book gives the rate

schedules throughout the U.S. for residential, commercial and industrial services for communities with populations over 2500. Minimum energy charges have been tabulated for all the utility companies in Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee and Virginia. These rates are given in Table I. Average costs per KWH has been calculated for all utility companies whose minimum energy charge was equal to or less than that for Saltville, Va.

These utilities and the average cost/KWH are given in Table II. Power rates at OMCC Chemicals Division plants are given in Table III. Rates for Saltville and McIntosh were taken directly from the existing power contracts.

The differences in power costs do not look like much, but power costs are about 30% of the production cost of sodium chlorate. Using the power costs in Table II the production costs per ton sodium chlorate at Saltville, McIntosh, and a TVA plant site are respectively, $87, $87 and $76. The advantages of the plant being located in a TVA area, the lowest power rate area in the southeastern U.S., are evident.

[fol. 1011] Conclusions

1. Power costs at Saltville and McIntosh are essentially the same, 6.1 Mil/KWH.

2. Power Costs in the TVA area are the lowest in the southeast, 4.17 Mil/KWH. This area includes almost all the state of Tennessee, the upper portion of Alabama and Mississippi and parts of Georgia and Kentucky. Huntsville, Ala. and Chattanooga, Tenn. are in this area.

3. Other Chemicals Division plants having power rates about the same as Saltville and McIntosh are: Aberdeen, N.C., Lake Charles, La., and Niagara Falls, N.Y.

4. Locating a chlorate plant in the TVA area reduces the production cost of chlorate $11/Ton or 12% based on the differences in power costs as compared to Saltville and McIntosh.

Recommendations

1. It is recommended that the TVA area be given every consideration for the location of a sodium chlorate plant.

2. Freight rates from Chattanooga should be compared with those of other Chemicals Division plants and Hooker's Columbus, Miss. plant.

[fol. 1012] Table III

Power Rates at OMCC Chemical Divisions Plants

Aberdeen, N. C.	5.9	Mil/KWH
Bossier City, La.	>7	Mil/KWH
Doe Run, Ky.	>7	Mil/KWH
East Pt., Ga.	>11	Mil/KWH
Huntsville, Ala. (Government Plant)	4.17	Mil/KWH
Lake Charles, La.	6.06	Mil/KWH
Leland, Miss.	>30	Mil/KWH
McIntosh, Ala.	6.1	Mil/KWH
Niagara Falls, N.Y.	6.05	Mil/KWH
North Little Rock, Ark.	>7	Mil/KWH
Saltville, Va.	6.1	Mil/KWH
Chattanooga, Tenn. (Metals Div. Plant)	4.17	Mil/KWH

[fol. 1013] IN UNITED STATES DISTRICT COURT

PLAINTIFFS' EXHIBIT 32

Chemicals Division Capital Requirements for Major Expansion Items

1959-1964 Inc.
(EX. Organics)

Report dated April 10, 1959, and Revised Exhibits 26, 29 and 30 dated October 1959

[Extracts]

[fol. 1014] Sodium Chlorate

Production of sodium chlorate has increased from 22,000 tons in 1950 to 64,000 tons in 1958. This growth is directly related to demand for brighter paper and paperboard, which has required pulp and paper mills to produce high-brightness pulps. Conventional bleaching techniques cannot efficiently achieve the highest levels of brightness now in demand and as a result, paper producers have turned to bleaching techniques requiring the use of chlorine dioxide, for which sodium chlorate is a raw material. Since chlorine dioxide cannot be transported as such, sodium chlorate is purchased by the mills and used for the captive manufacture of chlorine dioxide.

Total annual U.S. capacity for production of sodium chlorate is estimated at—tons..... 98,000
and it is visualized that demand will exceed present capacity by 1962. Present annual requirements for sodium chlorate in the southeastern part of the United States, where there is a heavy concentration of pulp and paper mills, is estimated at—tons..... 43,000
as compared with annual production capacity located in the southeast of only—tons..... 39,000

The chlorine dioxide production process used by the majority of the pulp mills in the southeast was developed by Olin Mathieson at its Niagara Falls Laboratory. The engineering and operating know-how so developed has been made available to the mills at no cost. Our technical service men have provided valuable assistance to the paper mills in solving start-up and operational problems. They are well known and respected in the industry.

We are confident that with a sodium chlorate facility located in the southeast we would be able to secure approximately one-third of the southeastern tonnage, or approximately—per annum—tons 14,000

After careful study of several locations we have concluded that a producing plant at McIntosh, Alabama would be the most advantageous from the standpoint of all factors involved.

Exhibit 23 (map) shows the proposed McIntosh plant in relation to all other competitive plants, together with the 30 pulp mills representing the prime market from which we propose to secure the major portion of our sales tonnage.

Please note that the proposed McIntosh location would be advantageous to 11 mills now consuming an estimated 17,350 tons of sodium chlorate annually, by providing a more favorable f.o.b. point.

It is recommended that a sodium chlorate facility having an annual capacity of approximately 15,000 tons be installed an an addition to our present McIntosh, Alabama plant, such facility to be ready for operation in 1961. We are advised that a competitive chemical producer, new to the sodium chlorate field, is giving serious consideration to the installation of a sodium chlorate producing plant; and therefore we further recommend that announcement be made at once of our plans for the new McIntosh chlorate facility.

Exhibit 24 is our tabulation of estimated results of investment in sodium chlorate facilities showing investment of $4,100,000, estimated to earn profit after taxes of 19.9% against sales and 11% against investment, with cash recovered in 6.4 years.

[fol. 1015] Exhibit 24.

Summary of Investment Results

Sodium Chlorate

Annual Production—Tons	14,000
Gross Investment	$4,100,000
Net Sales	$2,264,000
Pre-Tax Profit	$ 937,000
% to Net Sales	41.4%
Net Profit	$ 450,000
% to Net Sales	19.9%
% to Gross Investment	11.0%
Cash Profit	$ 639,000
Cash Recovery Period	6.4 Yrs.
Year Plant Required	1961
Time Required for Completion From Date of Authorization	18 Mons.

[fol. 1016]

EXHIBIT 26
REV. 10/59

PLANT ENGINEERING AND CONSTRUCTION SCHEDULE

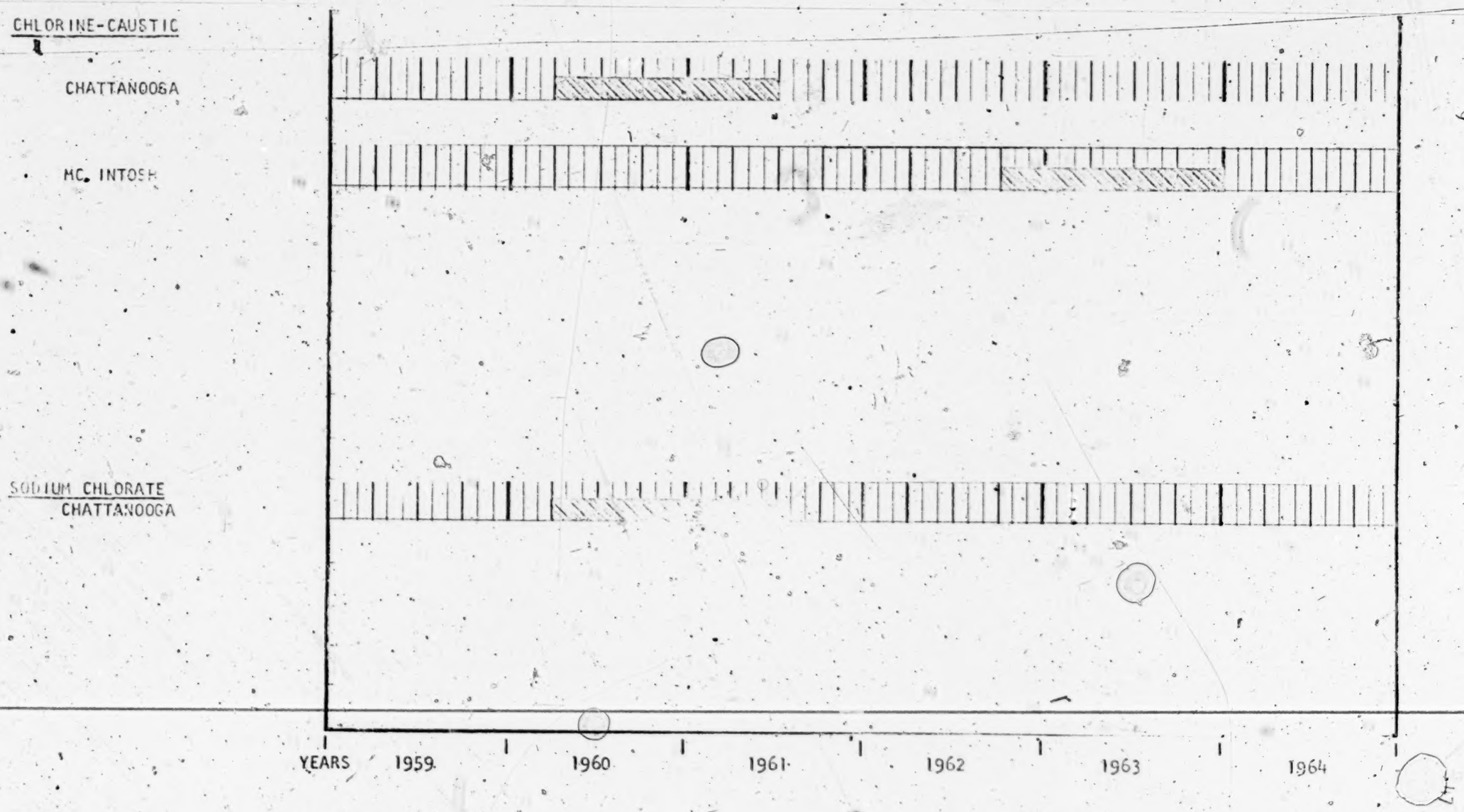

Exhibit 29

[fol. 1017]

Annual Cash Flow
(000 Omitted)

	1959		1960		1961		1962		1963		1964	
	Net Outlay	Cash Profit	Net Outlay	Cash Profit	Net Outlay	Cash Profit	Net Outlay	Cash Profit	Net Outlay	Cash Profit	Net Outlay	Cash Profit
Chlorine-Caustic —McIntosh	—	—	230	—	8,470	—	800	1,800	—	1,990		1,990
			3,230	—	870	420	—	640	—	640	—	640
Sodium Chlorate												
Grand Total	$ 1,720	$ 70	$14,530	$ 730	$24,750	$ 3,200	$19,870	$ 7,850	$12,130	$11,830	$ 860	$14,280

[fol. 1018]

Chlorine-Caustic, —Chattanooga	—	—	5,090	—	6,160	700	—	1,750	—	1,750	—	1,750
—McIntosh	—	—	—	—	—	—	230	—	8,470	—	800	1,800
Sodium Chlorate —Chattanooga			1,610	—	1,980	250	—	680	—	680	—	680
Grand Total	$ 940	$ —	$17,680	$ 190	$15,790	$ 3,790	$20,215	$ 7,050	$11,090	$11,080	$ 800	$13,570

[fol. 1019]

Exhibit 30

Economic Summary
(000 Omitted)

	Year	Net Outlay	Net Sales	Net Profit	% of Net Sales	% Return On Gross Investment	Cash Profit	Payout
Chlorine-Caustic —McIntosh	1962	9,500	6,210	1,520	24.5	16.0	1,990	4.8
Sodium Chlorate	1961	4,100	2,260	450	19.9	11.0	640	6.4
Totals—Productive Facilities		$73,860	$46,860	$10,570	22.6	14.8	$14,450	5.1

[fol. 1020]

Chlorine-Caustic								
—Chattanooga	1961	11,250	6,220	1,190	19.1	10.6	1,750	6.4
—McIntosh	1964	9,500	6,210	1,520	24.5	16.0	1,990	4.8
Sodium Chlorate								
—Chattanooga	1961	3,590	2,350	470	20.0	13.1	680	5.3
Totals—Productive Facilities		$66,515	$46,750	$10,270	22.0	15.4	$13,760	4.8

[fol. 1021] IN UNITED STATES DISTRICT COURT

PLAINTIFFS' EXHIBIT 33

Olin Mathieson Chemical Corporation
Industrial Chemicals Division

Research and Development Department

H-35.510 Electrochemical Survey Report
General Subject: H—Miscellaneous Inorganic Chemicals

Name	Res. Mgr.	Super.	Work By	Rep. By	
B. H. Wojcik					Chg. No.: 743-2011
B. H. Nicolaisen					
W. C. Gardiner	X	X			Report Dated: 4/17/59
A. J. Holmes			X	X	Report Typed: 5/7/59 vd
G. D. Byrkit					
H. A. Bruson					
J. B. Haglind					
S-R. C. Harshman					
S-T. H. Dexter					
S-C. M. White					
S-B. H. Wojcik					
S-R. M. Thomas					
S-G. K. Weisse					
S-G. W. MacMullen					

Economic Location of Sodium Chlorate Plant Using Platinized Titanium Electrode Cells

Approved: W. C. Gardiner. Signed: A. J. Holmes.

Date: May 8, 1959. Date: 5/7/59.

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[fol. 1023] Summary

The use of platinized titanium electrodes in a sodium chlorate cell may be much more efficient than conventional graphite electrodes. The following information is based on operation of a 9 ampere laboratory cell: One third the number of cells are required. Cells can operate at the boiling point of the electrolyte thus eliminating some process evaporation equipment and auxiliaries. Plant investment is reduced 11.7%. Production cost is reduced 9.4%.

Chattanooga, Tenn. is a better location for a chlorate plant than Saltville, Va., or McIntosh, Ala. Production costs at Chattanooga are 10-15% lower. Return on investment is 11-19% higher at Chattanooga.

[fol. 1024] Objective

This report was written to describe the new sodium chlorate cell plant developed at OMCC and to present the economics of such a plant at various locations.

Introduction

The use of a platinum plated titanium electrode for chloride electrolysis has been disclosed by several sources within the last year. This type electrode has been incorporated in a 9 ampere laboratory chlorate cell at Niagara Falls and has been operated for more than 100 days with very promising results. The results of these experimental data have been translated into the economics of a 40 ton per day sodium chlorate plant.

Technical Aspects of New Chlorate Cell Plant

Titanium does not function as an anode because it becomes covered with a very thin layer of electrically nonconducting oxide. This phenomenon becomes very useful when the titanium is plated with a very thin layer of platinum. Electrolysis takes place on the platinum. Should there be any discontinuities in the platinum film the exposed titanium becomes covered with this protective oxide film and further corrosion of the titanium is stopped. Such an electrode makes an excellent replacement for graphite because it is much more durable and takes up much less space.

Conventional chlorate cells to date have used graphite anodes. The upper operating temperature limit on these cells is 45°C. Above this temperature the corrosion of the graphite becomes excessive. Maximum allowable sodium chlorate concentration in this cell is 450 grams per liter. Concentrations in excess of this greatly reduce the life of the graphite. A typical chlorate plant flow sheet is given in Figure 1 with the corresponding flow rates given in Table I.

An improved method of operation of the chlorate cell with the platinized titanium electrodes has been under experimental study for several weeks. The chlorate cell is run at the boiling point of the electrolyte thereby evaporating off excess water and allowing the chlorate concentration to be 750 g/l or higher. Such operation eliminates the need for a salt evaporator and other salt handling equipment as well as a large steam generator. A process flow diagram of this process is given in Figure 2 with the flow quantities given in Table II.

The platinized titanium electrode cell can be operated at three times the current density of the Vickers-Krebs cell for the same amount of power consumption. Closer electrode spacing, higher operating temperatures and higher current efficiency makes this possible. Because of this, only one third the number of cells will be required. The compactness of the new cell along with the smaller number of cells will greatly reduce the size of the cell building.

[fol. 1025] Economics of New Chlorate Plant Location

Investment

The investment in the new type chlorate plant was calculated as follows: Vickers-Krebs states that the investment required for a conventional 40 ton per day chlorate plant is $3,197,000. They said that the cost of the cells is 20-30% of the investment or about $750,000. The costs for the platinized titanium cells is: Titanium, $219,000; Platinum, $200,000; Cell Boxes and contingency, $82,000; for a total of $510,000 or a saving in cell costs of $240,000. The Vickers-Krebs cell building is 60' x 160'. The building for the new cells would be about 40' x 90' or 6000 sq. ft. less. At $10/ft.^{2} this is a saving in building cost of $60,000. Elimi-

nating the need for a large steam plant and the salt evaporator saves an additional $100,000. Should the plant be located where it was necessary to handle rock salt as a raw material an additional investment of $25,000 would be required.

The net effect that the new cells could have on investment would be:

Cells	$ 240,000
Cell Bldg.	60,000
Steam Plant	25,000
Salt Evaporator	75,000
	$ 400,000
Less Salt Dissolving	—25,000
Total Saving	$ 375,000
Vickers-Krebs Plant Investment	$3,197,000
New Process Savings	375,000
New Plant Investment	$2,822,000

Production Cost

Labor, raw material, and repair costs are based on requirements supplied by Vickers-Krebs. Platinum replacement costs are taken as being equal to graphite replacement costs. Electricity costs are based on values given in Electrochemical Survey Report H-35.509 "Geographic Survey of Electricity Cost for Sodium Chlorate Plant" by A. J. Holmes.

[fol. 1026] Freight Equalization

Freight equalization is based on rail miles factored for the cost of freight shipment from Columbus, Miss. because Columbus is already shipping sodium chlorate. The rail miles were supplied by the Traffic Department at the Baltimore office. A table of these miles is given in Table III and the calculations for freight equalization are given in Table IV.

Plant Location

Three locations for a chlorate plant are considered in this report; Saltville, Va., McIntosh, Ala., and Chattanooga, Tenn. Chattanooga was picked because it is in the low-power cost TVA area, is relatively close to the chlorate market, and an OMCC Metal Division plant exists there.

It is believed that with a plant existing at Chattanooga, overhead and site development that would normally be incurred by a "grass roots" plant would be reduced or eliminated. Two cases were considered for Chattanooga. One where the plant would be located on the river so that salt might be shipped by barge for $8.70/ton and the other where the salt would be shipped by rail for $14.10/ton. The salt quotations were received from International Salt Co. for Avery Mine Run Rock Salt on 4/14/59.

Production cost estimates have been made for the above mentioned cases and are given in Tables V—VIII. Production costs are: Saltville, Va., $87.82/T $NaClO_3$; McIntosh, Ala., $89.29/T $NaClO_3$; Chattanooga, Tenn., on the river $76.72, not on the river $79.84. Production costs are reduced 9.4% over the conventional process.

Financial criteria are given in Table IX. Return on investment at the different locations are; Saltville, 16.4%; McIntosh, 15.9%; Chattanooga, on the river, 18.9%; Chattanooga, not on the river, 18.2%.

Conclusions

1. Using platinized titanium electrodes reduces the number of cells required in a chlorate plant by a factor of three.
2. Cells with platinized titanium electrodes can be operated at the boiling point of the electrolyte and at high chlorate concentrations thus eliminating the conventional salt evaporator and its auxilliaries.
3. A 40 ton per day sodium chlorate plant using platinized titanium electrodes reduces the investment $375,000 or 11.7%.
4. Chattanooga, Tenn. is a better location for a chlorate plant than Saltville, Va., or McIntosh, Ala. Production costs at Chattanooga are 10-15% lower.
5. The return on investment is 11-19% higher on a plant at Chattanooga than at Saltville or McIntosh.

[fol. 1027] Recommendations

1. It is recommended that Chattanooga, Tenn. be given more detailed consideration as a location for a sodium chlorate plant.

2. It is recommended that the platinized titanium electrode be tested in a prototype cell in order to better evaluate the method of operation outlined in this report.

[fol. 1028] IN UNITED STATES DISTRICT COURT

PLAINTIFFS' EXHIBIT 34

[Extract from Memorandum—Plaintiff's C. L. Williamson Exhibit 1, September 6, 1961]

Confidential

April 23, 1959.

"Mr. S. de J. Osborne
The Staff
Mr. J. O. Logan
E. H. Bellows, 460 Park Avenue

Notes on Chemicals-Staff Meeting—Thursday, April 16, 1959

Present:

Staff	Chemicals Division
S. de J. Osborne ($2)	J. O. Logan
D. W. Drummond	R. D. Burt
W. C. Foster	W. G. E. Clark
G. Grand	W. A. King
M. L. Herzog	C. C. Hightower
R. Hopkinson	J. R. Koehn
W. F. Otterstrom	C. V. Mayne
E. H. Bellows	J. G. McMullen ($1)
J. R. Sanderford	M. Metziger
	J. F. Newell
	L. E. Russell
	N. O. Stein
	C. J. Thomas
	C. L. Williamston
	B. H. Wojcik"

[p. 2]

"3. Industrial Chemicals Expansion Program

"An agreement was reached in principle that the expansion of the Industrial Chemicals operations

was necessary and would be authorized. However, approval of each segment of the program would have to be conditioned upon the showing that the [fol. 1029] step in question was either sufficiently profitable on its own merits or a necessary protective measure to defend an already profitable market. In the light of this policy, the following decisions were taken:"

. . . . . .

[p. 3]

"f. The program for sodium chlorate at McIntosh is not sufficiently attractive to be approved at this time. There should be further examination on three points:

"(1) Technical adequacy
"(2) Is the proposed installation basically a protective measure?
"(3) Is a pay-out of more than six years the best that can be obtained?"

. . . . . .

[p. 3]

"EHB, E. H. Bellows."

[fol. 1030] IN UNITED STATES DISTRICT COURT

PLAINTIFFS' EXHIBIT 37

Olin Mathieson Chemical Corporation

Date: May 1, 1959.

To: Mr. K. C. Frazier, at 20th Floor
From: O. J. Theobald, at Baltimore
Subject: Sodium Chlorate

Copy to: Dr. R. R. Shively
Mr. C. M. Norton
Mr. J. G. McMullen

The following is a review of our discussions on this subject and my reaction to the conclusions reached:

1. The only excuse for building another chlorate plant in the Southeast should be:
   a. Our desire to cash in on the excellent work done with our chlorine dioxide generator in the paper industry. We might cash in just as well by continuing to press for increased sales of chlorine and alkali.
   b. The absolute necessity for us to build *something* at Brunswick in order to maintain our South Atlantic facility.
   c. That the manufacture and sale of chlorate is at least as attractive or more profitable than production of chlorine and caustic.
2. While our contacts in the consuming industry are good and we could undoubtedly sell chlorate, we are faced with the danger of selling only at the expense of existing chlorine and alkali sales to the same industry. This is especially true, since the paper industry is so trade-relation conscious.

O. J. Theobald.

fmr

[fol. 1031] IN UNITED STATES DISTRICT COURT

PLAINTIFFS' EXHIBIT 38

May 22, 1959.

cc. Dr. B. H. Wojcik,
Dr. W. C. Gardiner,
Mr. E. J. Mahler.

Discuss with E.B. & EJM

Ask about the amount of money they will.
$75,000 suggested by BHW—EJM.
E.B. does not agree.

Mr. B. H. Nicolaisen,
Assistant Manager, Research &
Development Department,
Olin Mathieson Chemical Corporation,
P.O. Box 480,
Niagara Falls, N.Y.

Dear Mr. Nicolaisen:

I have your letter of April 23rd, addressed to Mr. R. B. Spence, concerning an agreement for the mutual development with Vickers-Krebs and ourselves of a non-graphitic anode chlorate cell.

Essentially this agreement seems satisfactory, with the exception of article 5.01—"This Agreement shall be construed in accordance with the laws of the State of New York, New York, U.S.A.". We believe this would be better if it was construed according to the Rules of Conciliation and Arbitration of the International Chamber of Commerce, or such other rules as it may designate.

We also discussed on your visit here some preference that would be given to Vickers-Krebs to construct such a Plant for Olin Mathieson. Whether this should be part of the agreement or a separate communication is questionable.

Would you kindly send us a copy of the agreement for signature. We too are looking forward to this opportunity of working with you on this development.

Very truly yours, Vickers-Krebs Limited, R. K. Thoman, General Manager.

Received June 2, 1959, B. H. Wojcik.

[fol. 1032] IN UNITED STATES DISTRICT COURT

PLAINTIFFS' EXHIBIT 39

Olin Mathieson Chemical Corporation
Industrial Chemicals Division

Research and Development Department

U-2.501 Electrochemical Survey Report
General Subject: U-Chlorates

Name	Res. Mgr.	Super.	Work By	Rep. By	
B. H. Wojcik					Charge No.: 743-2011
B. H. Nicolaisen					
W. C. Gardiner	X	X			Report Dated: 7/15/59
A. J. Holmes			X	X	Report Typed: 7/20/59: vd
G. D. Byrkit					
H. A. Bruson					
J. B. Haglind					
S-T. H. Dexter					
S-R. C. Harshman					
S-C. W. MacMullen					
S-R. M. Thomas					
S-G. K. Weisse					
S-C. M. White					
S-B. H. Wojcik					

Summary of Sodium Chlorate Plant Studies

Approved: W. C. Gardiner. Signed: A. J. Holmes.

Date: July 20/59. Date: July 20, 1959.

Received July 22, 1959, B. H. Wojcik.

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[fol. 1034] Summary

A conventional sodium chlorate plant (Vickers-Krebs type) is compared with a plant proposed by OMCC's Industrial Chemicals Research Department, (platinum coated titanium cell electrodes) from a technical and an economic point of view. (Laboratory cells are on test and prototype is being designed.) The economics of locating each type plant at Saltville, Va., McIntosh, Ala., and Chattanooga, Tenn., is also studied. Chattanooga seems to be the best location primarily because of the lower cost TVA electric power. The new process also appears to be cheaper to build and operate than the conventional one.

The new process plant could be built at Chattanooga for a cost of $2,822,000 and would give a return of 18.1% on the investment. A conventional plant would cost $3,222,000 and would yield a 14.3% return.

[fol. 1035] Objective

This report was written so that all the recent surveys on sodium chlorate manufacture could be grouped together, be brought up to date, and be evaluated as a whole.

Introduction

Several surveys have been written recently on various types of sodium chlorate plants and the economic location of these plants. The two types of plants that are under consideration are the conventional plant as proposed by Vickers-Krebs, Ltd. of Montreal, Canada, and the new platinized titanium electrode cell plant as proposed by OMCC's Industrial Chemicals Research Department. A study of electric power rates has been made. All these reports are integrated and are contained in this survey.

Technical Aspects of Conventional Chlorate Plant

Vickers-Krebs Plant

A 40 ton per day sodium chlorate plant was described to W. C. Gardiner, R. C. Harshman and A. J. Holmes of Olin Mathieson by R. B. Spence and Dr. M. Zundel of Vickers-Krebs, Ltd. of Canada. Krebs has constructed 17 sodium

chlorate plants throughout the world since 1925 and is now building a plant in Finland utilizing a 30,000 ampere cell. A process flow diagram is given in Figure 1, with flow rates given in Table 1. A general description of the proposed plant is as follows:

Cells

One hundred monopolar cells rated at 30,000 amperes in two banks using perforated steel cathodes and impregnated graphite anodes.

[fol. 1036] Brine Purification

Facilities for brine treatment, filtration and storage (100 hrs. cell operation).

Brine Post-Treatment

Facilities for removing hydrogen, sludge, and hypochlorite from brine containing sodium chlorate.

Sodium Chloride Recovery

Facilities for the evaporative concentration of sodium chlorate and the continuous crystallization and removal of sodium chloride crystals.

Sodium Chlorate Recovery

A vacuum crystallizer, crystal growing type, with a capacity of 45 tons a day of sodium chlorate crystal. Crystals can be produced in different sizes. The equipment is designed for crystals between 60 mesh and 1/16" at rated capacity. The sodium chlorate is recovered on a continuous centrifuge and is dried in an indirect gas fired rotary dryer. The plant is completely instrumented.

Buildings

Building of structural steel frame and corrugated asbestos board siding. All ground floors sloped to sewers for easy washing. Natural ventilation is used in the cell and evaporator sections. Forced ventilation is used in the packing area and in the rectifier room. Space heaters are used to provide heat throughout the plant. The cell building is

one story 60′ x 160′ x 25′ high. At one end is an office, laboratory, and rectifier room. At the other end is the lockers and lavatory. The crystallizing building is three stories 70′ x 30′ x 65′ high. The drying and packaging building is two stories 70′ x 30′ x 25′ high.

Power Distribution

Power for all purposes will be supplied in one location at 13.8 KV.

Rectifier

Water cooled mechanical rectifiers having onput of 30,000 amperes continuous, 5% overload continuous, 375 volts maximum, and continuous automatic load regulation.

The utility requirements of the plant are as follows:

A.C. Power, 13.8 KV

Total Installed Power	12,500 KW
Normal continuous load	10,750 KW

[fol. 1037] Cooling Water

River Water—Reusable

Consumption at 60°F	2400 GPM
at 80°F	3500 GPM

Brine

Brine with the following analysis

NaCl	300 g/l
$SO_4^{=}$	3.2 - 3.7 g/l
Ca^{++}	0.7 - 1.5 g/l
Mg^{++}	0.1 g/l

Average Consumption 18,000 gal/day

Instantaneous output 50 GPM

Oil

Bunker C

Summer	3.7 tons/day
Winter	5.4 tons/day

Raw material consumptions per ton of $NaClO_3$ produced for the plant are listed as follows:

Power	A.C. Power for electrolysis measured on 13.8 KV inlet	KWH	6100
	A.C. Power for other utilities	KWH	200
Steam	at 150 PSIG for process	lbs.	2,750
	for heating	lbs.	250
Brine		gal.	460
HCl	22° Be	lbs.	50
NaOH	50%	lbs.	4
[fol. 1038]			
Soda Ash		lbs.	10
Barium Chloride		lbs.	32
Graphite (treated, dense quality)		lbs.	23
Fuel Consumption (Bunker C)		lbs.	185

The personnel requirements for the plant are as follows:

Operating Labor		Total Force
Cell Room	1 Operator/shift 7 day/week	4
Concentration, Crystallization, Drying	1 Operator/shift 7 day/week	4
Handling, Bagging Moving of Drums	3 man, daytime only 5 day/week	3
Brine Preparation	1 man, daytime only 5 day/week	1
Supervision		
Plant Engineer *	½ day	½
Chemist *	½ day	½
Instrument Repair *	1-2 hrs. day	1/5
Foreman	1 per shift 7 days/week	4
Maintenance		
Supervision *	1 Foreman, half-day	½
Cell Rebuilding, Routine Maintenance and Graphite Preparation	2 men, daytime only 5 day/week	2
[fol. 1039]		
Electrician	1 man, daytime only 5 day/week + standby for emergency	1
Mechanic	1 man, daytime only 5 day/week	1
Storekeeper *	1 man, half-day occupation	½

* Personnel to be shared with other production facilities.

Vickers-Krebs estimates that this plant would cost $3,197,000 for a turnkey job. This proposal includes the design, engineering, supply, erection and startup supervision for a nominal 40 tons sodium chlorate per day on a level site at an existing plant where brine is available. An estimated additional $25,000 would be required to provide solid feed salt facilities.

Technical Aspects of New Chlorate Cell Plant

Titanium does not function as an anode because it becomes covered with a very thin layer of electrically non-conducting oxide. This phenomenon becomes very useful when the titanium is plated with a very thin layer of platinum. Electrolysis takes place on the platinum. Should there be any discontinuities in the platinum film the exposed titanium becomes covered with this protective oxide film and further corrosion of the titanium is stopped. Such an electrode makes an excellent replacement for graphite because it is much more durable and takes up much less space.

Conventional chlorate cells to date have used graphite anodes. The upper operating temperature limit on these cells is 45°C. Above this temperature the corrosion of the graphite becomes excessive. Maximum allowable sodium chlorate concentration in this cell is 450 grams per liter. Concentrations in excess of this greatly reduce the life of the graphite.

An improved method of operation of the chlorate cell with the platinized titanium electrodes has been under experimental study for several weeks. The chlorate cell is run at the boiling point of the electrolyte thereby evaporating off excess water and allowing the chlorate concentration to be 750 g/l or higher. Such operation eliminates the need for a salt evaporator and other salt handling equipment as well as a large steam generator. A process flow diagram of this process is given in Figure 2 with the flow quantities given in Table 2.

The platinized titanium electrode cell can be operated at three times the current density of the Vickers-Krebs cell for the same amount of power consumption. Closer electrode spacing, higher operating temperatures and higher current

efficiency makes this possible. Because of this, only one third [fol. 1040] the number of cells will be required. The compactness of the new cell along with the smaller number of cells *with* greatly reduce the size of the cell building.

Unit Consumption Comparison

A comparison of the unit consumptions of the Vickers-Krebs and Pt-Ti anode chlorate plants is as follows:

Units per short ton $NaClO_3$

	Vickers-Krebs	Pt-Ti Cell Plant
Salt, Ton	.574	.574
Graphite, lb.	23	—
Platinum, Oz.	—	.11
HCl, 22°Bé, lb.	50	50
Cr_2O_7, lb.	2.7	2.7
Steam, lb.	3,000	none
Power (A.C. KWH)	200	200
Electrolytic (A.C. KWH)	6100	6100
Labor		
Operating, M.H.	1.78	1.78
Supervision, M.H.	.75	.75
Repair		
Labor, M.H.	.64	.64
Materials	.80	.80

Economics of Sodium Chlorate Production

The unit costs used in making a production cost estimate for the Vickers-Krebs plant were derived from the following sources:

The investment is that sum proposed by Vickers-Krebs and does not include any expense incurred by OMCC in site preparation or for rock salt handling.

[fol. 1041] Brine, HCl, Fuel Oil, Steam, Labor, Maintenance, Maintenance Overhead; Taxes and Indirect Overhead costs were given to W. C. Gardiner in a letter dated 2/12/57 from G. F. Comer. Labor rates in this estimate have been increased 5%.

Graphite costs were based on National Carbon prices for impregnated graphite. Quotations were received from International Salt Co. for barge shipment of salt to Chattanooga on 4/14/59.

Cr_2O_7, NaOH, Na_2CO_2 and $BaCl_2$ unit costs were taken from a current Oil, Paint and Drug Reporter.

Maintenance materials was figured as ½ Maintenance labor costs at Saltville.

Transportation charges were based on NaOH shipping charges of $5/T and 40 ton sodium chlorate tank cars.

Freight equalization is based on rail miles factored for the cost of freight shipment from Columbus, Miss. because Columbus is already shipping sodium chlorate. The rail miles were supplied by the Traffic Department at the Baltimore office. A table of these miles is given in Table 3, and calculations for freight equalization are given in Table 4.

The power requirements for a 40 ton per day sodium chlorate plant were given in a proposal received from Vickers-Krebs. The plant uses 6100 KWH/ton $NaClO_3$ for electrolytic power and 200 KWH/ton $NaClO_3$ for auxiliaries. The demand load for these power requirements is 10,500 KW. The plant would use 7,580,000 KWH per month.

The National Electric Rate Book has been obtained from the Federal Power Commission. This book gives the rate schedules throughout the U. S. for residential, commercial and industrial services for communities with populations over 2500. Minimum energy charges have been tabulated for all the utility companies in Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee and Virginia. Average costs per KWH has been calculated for all utility companies whose minimum energy charge was equal to or less than that for Saltville, Va.

These utilities and the average cost/KWH are given in Table 5. Power rates at OMCC Chemicals Division plants are given in Table 6. Rates for Saltville and McIntosh were taken directly from the existing power contracts.

The investment in the new type chlorate plant was calculated as follows:

Vickers-Krebs states that the investment required for a conventional 40 ton per day chlorine plant is $3,197,000. They said that the cost of the cells is 20-30% of the investment or about $750,000. The costs for the platinized titanium cells is: Titanium, $219,000; Platinum, $200,000; Cell Boxes and contingency, $82,000; for a total of $510,000 or a saving in cell costs of $240,000. The Vickers-Krebs cell building is [fol. 1042] 60′ x 160′. The building for the new cells would

be about 40′ x 90′ or 6000 sq. ft. less. At $10/ft.^{2} this is a saving in building cost of $60,000. Eliminating the need for a large steam plant and the salt evaporator saves an additional $100,000. Should the plant be located where it was necessary to handle rock salt as a raw material an additional investment of $25,000 would be required.

The net effect that the new cells could have on investment would be:

Cells	$ 240,000
Cell Bldg.	60,000
Steam Plant	25,000
Salt Evaporator	75,000
	$ 400,000
Less Salt Dissolving	—25,000
Total Saving	$ 375,000
Vickers-Krebs Plant Investment	$3,197,000
New Process Savings	375,000
New Plant Investment	$2,822,000

Production Cost

Labor, raw material, and repair costs are based on requirements supplied by Vickers-Krebs. Platinum replacement costs are taken as being equal to graphite replacement costs.

Chlorate Plant Economics

Production cost estimates have been made from the above mentioned information on conventional and new type chlorate plants located at Saltville, Va., McIntosh, Ala., and Chattaooga, Tenn. These production costs are given in Tables 7 through 12 and summarized in Table 13. Financial criteria for these plants are summarized in Table 14.

The results of this study show that Chattanooga, Tenn. is the best location for a chlorate plant and that the new type anode plant is less expensive to build and operate.

[fol. 1043] Conclusions

1. The Vickers-Krebs plant seems to be the orthodox chlorate plant as is presently used in this country.

2. Investment requirements for a 40 T/day $NaClO_3$ plant of the Vickers-Krebs type is $3,197,000 on a prepared site.

3. Production costs per ton $NaClO_3$ plants at the following locations are: Saltville, Va., $93.80; McIntosh, Ala., $95.65; and Chattanooga, Tenn., $86.99.

4. Return on Investment of a Vickers-Krebs type chlorate plant at the various locations are: Saltville, Va., 12.9%; McIntosh, Ala., 12.6%; and Chattanooga, Tenn., 14.3%.

5. Using platinum coated titanium electrodes reduces the number of cells required in a chlorate plant by a factor of three.

6. Cells with platinum coated titanium electrodes can be operated at the boiling point of the electrolyte and at high chlorate concentrations thus eliminating the conventional salt evaporator and its auxiliaries..

7. A 40 ton per day sodium chlorate plant using platinum coated titanium electrodes is estimated to reduce the investment $375,000 or 11.7%.

8. Chattanooga, Tenn. is a better location for a chlorate plant than Saltville, Va., or McIntosh, Ala. Production costs at Chattanooga are 9-11% lower.

9. The return on investment is 12% higher on a plant at Chattanooga then at Saltville or McIntosh.

Recommendations

1. It is recommended that Chattanooga, Tenn. be given first consideration in the location of a sodium chlorate plant.

2. It is recommended that the platinum coated titanium electrode be tested in several cell designs on a protype scale in order to better evaluate the method of operation as outlined in this report.

[fol. 1044] IN UNITED STATES DISTRICT COURT

PLAINTIFFS' EXHIBIT 40

Olin Mathieson Chemical Corporation

To: Mr. W. A. King, at Baltimore Date: July 27, 1959.
From: K. C. Frazier, at Baltimore
Subject: Sodium Chlorate Plant

Of the two locations compared, namely, McIntosh, Alabama and Chattanooga, Tennessee, for a 15,000 tons per year sodium chlorate plant, it would seem from a purely sales viewpoint that the McIntosh, Alabama site would be preferable for the following reasons:

1. McIntosh would have a low freight rate for customers using 17,350 tons per year. Chattanooga would be a low equalization point for customers using approximately 11,000 tons per year.

It is our belief we could probably sell the output of a 15,000 tons per year chlorate plant, but before making a definite commitment we would like to have a closer prospect by prospect survey made to determine exactly what the situation is.

It should be realized that the paper industry, to whom this product would be sold, have strong reciprocal relationships. To the same customers to whom we would try to sell sodium chlorate we are at present selling the following:

Caustic Soda	$2,437,468
Soda Ash	491,105
Chlorine	3,057,736
Total	$5,986,309 per year

K. C. Frazier.

Received July 27, 1959, W. A. K.

[fol. 1045] IN UNITED STATES DISTRICT COURT

PLAINTIFFS' EXHIBIT 41

Mr. J. O. Logan, Baltimore
W. A. King, Baltimore

July 28, 1959.

Sodium Chlorate Plant

We attach memos from Frazier and Shively, each of whom we requested to review independently the sodium chlorate market studies for the Southeast. The writer has discussed the matter with both these gentlemen, as well as with McMullen and Theobald, so these statements are not unilateral.

Sales feels that 15,000 tons of sodium chlorate can be moved yearly from either point so long as some other producer does not start up in the region. Since McIntosh would provide the low f.o.b. point for some 17-18,000 tons of presently known tonnage, as compared to approximately 11,000 tons for Chattanooga, the McIntosh location would be best from a strictly sales viewpoint.

Shively has pointed out that the large differential in power costs will, of course, be a factor which must be weighed against McIntosh by Operations.

Frazier, McMullen and Theobald, as well as the writer, believe that we should review the matter with the potential users prior to a definite commitment to proceed with the plant. We believe this can be done within a period of two weeks but we prefer not to renew customer contacts on the subject unless there is a reasonably good chance that a plant will be forthcoming if the review seems favorable to the project. In such a review, we should attempt to learn to what extent we might be hurt by the loss of sales of other products to the paper industry.

W. A. King.

cc: 3 letters to OJT, KCF, JGMcM, RRS.

[fol. 1046] IN UNITED STATES DISTRICT COURT

PLAINTIFFS' EXHIBIT 42

Olin Mathieson Chemical Corporation

Date: August 7, 1959.

To: Mr. J. G. Chalfant at Baltimore
From: W. W. Northgraves at Baltimore

Copy to: W. A. King
J. O. Logan
N. C. Schultze
B. H. Wojcik

Subject: Sodium Chlorate Tank Cars Patent Application N. P. 1719

The subject patent application, which was filed in May of this year, relates to a modified tank car for transporting sodium chlorate and the method of unloading same. This memo is written to suggest a way of making some money out of this patent application which, in my opinion, has a good chance of being allowed.

I have only one copy of the patent application available. This is being circulated to those receiving copies of this memorandum. Present rail and road transport for bulk sodium chlorate cannot be unloaded without some difficulty and without considerable hazard to the person performing the unloading operation. My proposal, if it works, will resolve most of the objections. If we go into the chlorate business in the near future, I believe that the improvement in the unloading technique as described in the application could be used to advantage in our sales promotion. If we do not plan to produce chlorate in the near future, I believe that it may be possible to sell or license this patent provided that we can stimulate the users of bulk chlorate to demand tank cars of the type described.

It will first be necessary to demonstrate the practicability of the proposal. This might be done by modifying our chlorate car which shuttles back and forth between Hooker and our C2 plant at Niagara Falls. The modification re-

quired involves primarily a simple and inexpensive piping arrangement inside the car.

If the unloading proceeds as successfully as I expect it will (which of course will benefit our operators at Niagara) we might proceed in one of several ways.

We might approach Pennsalt with our data and experience and offer to license the operation to them on some yet to be determined basis. Pennsalt has already been informed of the details of the proposed modification to the tank cars but has elected to proceed with the converted hopper cars which they are now offering to the trade. However, they had expressed an opinion on our proposal in the form of a letter from Brian L. Shera which says in part, "This looks good and it might be the ultimate process for handling chlorates."

If Pennsalt remains uninterested in our development we might contact Buckeye Cellulose. They own the tank cars in which their chlorate is shipped. I think there is an excellent chance that they would be glad to avail themselves of the improved unloading procedure which we might offer to them without cost in order to establish the use of our invention in a pulp mill. When this is done, I believe the demand for this modified car from the rest of the mills using chlorate [fol. 1047] may snowball rapidly. As mentioned above, the necessary preliminary to any attempt to sell or license this invention to the chlorate industry is the actual trial of the matter at Niagara Falls.

An early expression of opinion from those concerned would be appreciated.

W. W. Northgraves.

Received August 7, 1959, W. A. King.

[fol. 1048] IN UNITED STATES DISTRICT COURT

PLAINTIFFS' EXHIBIT 43

8/12/59.

To: Mr. W. A. King at Baltimore
From: J. O. Logan at Baltimore

Copy To: J. G. Chalfant,
W. W. Northgraves,
N. C. Schultze,
B. H. Wojcik.

Subject: Sodium Chlorate Tank Cars, Patent Application N. P. 1719

Re Northgraves' memo of August 7th to Chalfant on the subject. Since we have very serious considerations of chlorate production underway, it is definitely in order not to consider or talk to anyone concerning the sale or license of this patent at this time.

When our decision is reached on chlorate production, we can then define a course of action on the tank car.

J. O. Logan.

Received August 13, 1959, B. H. Wojcik.

[fol. 1049] IN UNITED STATES DISTRICT COURT

PLAINTIFFS' EXHIBIT 44

Extract from the Minutes of Division Management Meeting Held on August 17, 1959

Present: J. O. Logan, J. F. Newell, O. J. Theobald, Jr., C. V. Mayne, R. Smego, W. A. King, C. L. Williamson

Capital Expansion Program

Williamson indicated that for capital purposes, we must review our expansion program. Further, that in discussion with Mr. Block, the items were indicated which are to appear on our 1960 budget. One of the items was the Chlorate

Plant, and Sales expressed the opinion that they should not conduct another market survey on Chlorate unless we are prepared to state that we are going to build a plant. In this connection, it is felt that advice from Management is necessary. In the meantime, Mr. Smego will review freight picture of the Chattanooga vs. McIntosh locations. Mr. Logan indicated he would like to see a complete wrap-up of the Chlorate picture, assuming the plant at Chattanooga with the economics based on a Chlorine Plant at that location as well. In other words, the figures are to be put together without survey on the basis that a CAR would be submitted.

[fol. 1050] IN UNITED STATES DISTRICT COURT

PLAINTIFFS' EXHIBIT 45

August 18, 1959.

E. Block, Baltimore
B. H. Wojcik, Baltimore

J. O. Logan,
E. J. Mahler.

Vickers Krebs Sodium Chlorate Cell Development Agreement

In accordance with your request, a call was made at Canadian Vickers in Montreal, August 14, regarding changes in the proposed Sodium Chlorate Cell Development Agreement. Representing Canadian Vickers at this meeting were R. Thoman, Vice President and General Manager, and R. Spence, Sales Manager.

The proposed changes involving a top limit of a $100,000 out-of-pocket expenditure by O.M.C.C. and an equal out-of-pocket expense by Vickers Krebs were discussed initially. In addition, it was stated that both parties would have an equal voice in the setting up of a program as well as the evaluation of the data. Spence objected to the proposition on the basis that Vickers Krebs would not, under such terms, receive any credit for its cell "know-how".

Following a discussion of the pro's and con's of the new proposal, including a possible tax penalty against Vickers

Krebs, Thoman read portions of a letter from Krebs in reply to our initial proposition. Krebs indicated in this letter that he has been working on platinized titanium electrodes for quite some time and that currently he has a project going on at the University of Stockholm directed toward the development of a chlorate cell which may be used with the new anodes. He further stated that the conventional chlorate cell could not be used with platinum titanium anodes and urged that an agreement be signed with O.M.C.C.

When it developed that Vickers Krebs had little if anything to contribute to the cell development, both Spence and Thoman took a more favorable approach to a joint venture under our terms. Thoman promised to write to Krebs about our latest proposal, requesting that immediate consideration be given to a joint program. As soon as Thoman hears from Krebs, hopefully within the next two weeks, he will communicate with me regarding their decision.

Original signed by B. H. Wojcik.

BHW:feg

[fol. 1051] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 46

Extract from the Minutes of Division Management Meeting Held on August 31, 1959

Present: J. F. Newell, C. C. Hightower, R. C. Burroughs, K. C. Frazier, W. A. King, C. L. Williamson, Capital Expansion Program.

Mr. Hightower reported that based on research report, it appeared that the proposed 40 ton per day Sodium Chlorate Plant located at Chattanooga would approximate a 4.8 year payout based on approximately $3.2 million investment. This investment figure includes using the Vickers Krebs cells. Using our cells, the capital investment appears to approximate $2.8 million with a 4.1 year payout. In either case, the picture will be better with the inclusion of a Chlorine Plant. Economics favor Chattanooga primarily due to TVA power availability.

[fol. 1052] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 48

Vickers Krebs
Limited

4970 Notre Dame Street East, Montreal, Canada,
Telephone: Clairval 6-2651

September 4th, 1959.

Dr. B. H. Wojcik,
Manager, Research and Development,
Chemicals Division,
Olin Mathieson Chemical Corporation,
10 Light Street,
Baltimore, Md.

Dear Dr. Wojcik:

With respect to the various discussions and correspondence which we have had with your Company concerning a possible agreement on the development of a sodium chlorate electrolytic cell utilizing non-graphitic anodes, we refer particularly to your visit to our offices on August 14th, 1959.

As we advised you yesterday during our telephone conversation, this company is not prepared to support a joint development project with any cash disbursements other than that which would cover our own personal expenses on the matter.

With this basic policy as a foundation, we still feel that mutual collaboration can be effected but, prior to proceeding to formulate an agreement, discussions will be required regarding specific points, some of which are as follows:

1. Definition of the scope of the agreement.

[fol. 1053] 2. Contribution and responsibility of respective parties.

3. The physical extent of the overall project in terms of equipment required.

4. The length of operating time and the degree of supervision.

5. Interpretation of and conclusion from operating results.

6. Magnitude and share of future royalties.
7. Application and prosecution of patents.
8. Conduct of development work after completion of piloting but prior to termination of agreement.
9. Contract for construction of future Olin Mathieson plant.

We consider it advisable at this stage for you to give some thought to each of these issues, and we shall do likewise here.

In the near future we suggest an additional meeting be held to determine whether an agreement can be reached which will be mutually acceptable and still compatible with our respective attitudes with regard to these major points.

Yours very truly, Vickers Krebs Limited, R. K. Thoman, General Manager.

/as

Received September 8, 1959, B. H. Wojcik

[fol. 1054] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 49

October 5, 1959.

Mr. R. K. Thoman, General Manager
Vickers Krebs Limited
4970 Notre Dame Street East
Montreal, Canada

Dear Mr. Thoman:

Pursuant to our continued interest in the possibility of producing sodium chlorate, we would like to inquire whether there is any basis on which Vickers Krebs would consult with us, for a fee, in building a single standard chlorate cell.

We indeed appreciate the kindness shown in the past and hope that you will be able to favor us in our present request.

Your very truly, B. H. Wojcik, Director of Research and Development for Industrial Chemicals.

BHW:feg

[fol. 1055] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 50

Vickers Krebs
Limited

4970 Notre Dame Street East, Montreal, Canada,
Telephone: Clairval 6-2651

October 26th, 1959.

Dr. B. H. Wojcik,

Director of Research and Development,
Olin Mathieson Chemical Corporation,
Chemicals Division,
Mathieson Building,
Baltimore 3, Maryland.

Dear Dr. Wojcik,

In reply to your letter of October 5th, 1959, we would state that there is a basis on which we would consult with you in building a single standard chlorate cell.

We must reiterate that our main interest lies in the ultimate engineering and construction of the sodium chlorate plant which you might subsequently build. It is only through this avenue that we deem it possible to recover adequate compensation for our technical knowledge and experience, which in fact is our major "stock in trade".

With regard to your proposed pilot plant, we would be prepared to consult with you for a nominal fee plus payment of our direct costs, the magnitude of the fee being dependent on the final scope of the work. However, we would need some adequate assurance that when you finally proceed with a manufacturing plant of commercial proportions, Vickers Krebs Limited would be the turnkey contractor. If this is agreeable to you in principle, we are certain that the details can be worked out to our mutual satisfaction.

Kind personal regards.
All other things being equal, we will give.

Yours very truly, For: Vickers Krebs Limited, R. K. Thoman, General Manager.

/as

[fol. 1056] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 51

November 9, 1959.

Mr. R. K. Thoman,
General Manager
Vickers Krebs Limited
4970 Notre Dame Street East
Montreal, Canada

Dear Mr. Thoman:

We, indeed, appreciate your kind letter of October 26 relative to our mutual interest in a production facility for sodium chlorate.

In general, we are in agreement with your views on a cooperative program pertaining to the development of a chlorate cell utilizing platinum-titanium anodes. This we would like to discuss with you and put into affect as soon as possible.

With regard to assurance from Olin Mathieson Chemical Corporation that Vickers Krebs would be the turnkey contractor when we decide to build a chlorate plant; we, of course, would give your company a preferred position providing everything is equal to what will be available from others.

I would very much like to see us start on the development of a new sodium chlorate cell. I feel rather strangely about the benefits which our companies will derive from a joint study. We will be pleased to meet with you at your convenience to discuss the details of a joint program.

Sincerely, B. H. Wojcik, Director of Research and Development for Industrial Chemicals.

BHW:AM
CC: Mr. E. Block

[fol. 1057] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 53

Olin Mathieson Chemical Corporation

Date: November 25, 1959.

Copies to: Mr. E. J. Mahler,
Dr. W. C. Gardiner.

To: Dr. B. H. Wojcik (2) at Baltimore
From: B. H. Nicolaisen at Niagara Falls
Subject: Meeting With Vickers-Krebs November 24, 1959

Present for Vickers-Krebs—R. Spence
Present for OMCC — B. H. Wojcik
W. C. Gardiner
B. H. Nicolaisen

This meeting was held at 460 Park Avenue. It was hoped that Vickers-Krebs would finally state the conditions under which they would serve in a consulting capacity for OMCC. These terms were not stated in a specific manner.

Vickers-Krebs is still interested in collaborating with OMCC on terms similar to those in the proposed agreement submitted to them. They feel that this is the only way in which they can contribute satisfactorily to the development of the process as a whole or to any phase of it. They are standing by their original position as regards cost sharing on the project. They will bear the costs incurred by their people working on the project. They expect OMCC to do the same. Spence estimated their costs would be about $25,000 on this basis.

There is one significant change to which Vickers-Krebs would agree on the cost-sharing problem. If Vickers-Krebs builds a plant for anyone using the new process, the total costs for the work done under the agreement would be pooled, and Vickers-Krebs would then reimburse Olin Mathieson in sufficient amount so that each of our costs would be the same. However, if OMCC builds or has built a chlorate plant using the new process by anyone other than Vickers-Krebs we would pay Vickers-Krebs for their portion of the costs of the development program.

Vickers-Krebs' reasoning behind this is that they cannot afford to contribute heavily to the development program until they have built a plant under the new process. They also feel that there should be some penalty to OMCC if Vickers-Krebs passes on know-how but OMCC does not reward Vickers-Krebs by award of a plant construction contract.

In consideration of the above, Vickers-Krebs will assign all patents to OMCC. OMCC will bear all costs related to patent activities. OMCC will agree to license Vickers-Krebs' customers for new process plants to operate under these patents. OMCC would collect all royalties, size of which would be agreed upon with Vickers-Krebs.

In connection with the conditions for a consulting arrangement, Spence said that Vickers-Krebs would propose to do this work on a cost plus nominal fee basis. The size of the fee has not been resolved by them but would not be discouragingly large. However, in addition to the foregoing, they would also require that OMCC pay them a supple- [fol. 1058] mental fee in the event OMCC were to build or to have built a chlorate plant by anyone other than Vickers-Krebs. This penalty fee has not been fixed either. Apparently there is divergent opinion in the Vickers-Krebs organization on exactly how large it should be. Spence says that he thinks it would be prohibitively large from our viewpoint no matter which Vickers-Krebs faction prevails.

Summary:

It is quite apparent that Vickers-Krebs wishes to proceed on a collaborative basis but is adamant to any proposal which would necessitate their spending money outside of their own organizational routine until after they had realized a profit from the development.

B. H. Nicolaisen.

BHN:HM

Received November 30, 1959, B. H. Wojcik.

[fol. 1059] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 54

E Block—J. O. Logan

Vickers Krebs
Limited

4970 Notre Dame Street East, Montreal, Canada,
Telephone: Clairval 6-2651

January 14th, 1960.

Any further action on the draft of the V.K. agreement.

Dr. B. H. Wojcik,

Director of Research and Development for Industrial Chemicals,
Chemicals Division,
Olin Mathieson Chemical Corporation,
Mathieson Building,
Baltimore 3, Md.

Dear Bruno,

You may recall that, during the post-Christmas week, we discussed on the telephone the latest developments concerning our discussions on an agreement to collaborate on a sodium chlorate electrolytic cell. In fact, this was a follow-up to the discussions held in your Offices in New York on November 24th and Niagara Falls November 30th, 1959.

You had advised me that, in principle, your Management had agreed to the foundations which were laid in our New York meeting and that we should expect to receive, at an early date, the preliminary draft of a new agreement based on all our latest talks.

As you can see, two weeks have gone by and we are now becoming concerned as to the current status of this negotiation. We are anxious to receive word from you as to when we might expect to receive a draft agreement embodying the latest points, conclude same, and commence execution of the joint-development program.

In view of the recent publicity attached to platinum-plated titanium electrodes for use in the electrolysis of sodium chlo-

ride brine, we consider that much harm can be experienced in delaying the start of our joint venture, inasmuch as it would appear from our recent talks and correspondence that our two Companies have agreed in principle to proceed together in this field.

[fol. 1060] Our Company would appreciate some indication from you by return correspondence as to when we might expect our joint plans to crystallize.

With kind personal regards.

Your very truly, For: Vickers Krebs Limited, R. B. Spence, General Sales Manager.

/as

Private Wire

Olin Mathieson

B H Wojcik

0

AXXXXXXX-040 Icex Niag 9 12-30-59 100

Bob Spence Called Today 12-30 Concerning the Status of Proposed Agreement With Them.

B. H. Nicolaisen.

Received E. B., January 18, 1960.

Received January 18, 1960, B. H. Wojcik.

[fol. 1061] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 56

May 26, 1960.

Olin Mathieson Chemical Corporation
Industrial Chemicals Division

Research and Development Department

U-2502 Electrochemical Survey Report
General Subject: U-Chlorates

Name	Res. Mgr.	Super.	Work By	Report By
J. E. Baker				
H. A. Bruson				
G. D. Byrkit				
W. C. Gardiner	X			
J. B. Haglind				
C. C. Hightower				
A. J. Holmes			X	X
M. Metziger				
J. R. Newberry		X		
B. H. Nicolaisen				
B. H. Wojcik Mgr. R & D				
J. L. Wood				
S-B. H. Wojcik				
S-C. W. MacMullen				
S-C. M. White				
S-R. M. Thomas				
S-R. C. Harshman				
S-G. K. Weisse				
S-A. W. Sawyer				

Charge No.: 743-2011

Report Dated: 4/27/60

Report Typed: 5/18/60:vd

Sodium Chlorate Manufacture for Sodium Chlorite Plant at Niagara Falls, New York

Approved: W. C. Gardiner. Signed: A. J. Holmes.

Date: 5/20/60. Date: 5/23/60.

[fol. 1062] Table of Contents

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Economic Aspects of Chlorate Plant	5
Conclusions	7
Recommendations	7
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[fol. 1063] Summary

A study has been made to evaluate the proposal to attach chlorate cells to the new Niagara chlorine plant to produce the sodium chlorate required by the sodium chlorite plant. At present chlorate consumption levels, nine 33,000 ampere platinized titanium anode chlorate cells would be required and would use 11 volts from the chlorine plant electrolytic line. Proposed increased capacity would use 15 cells and 19 volts. Sodium chlorate recovery from cell liquor would be relatively simple. The process is economically attractive. Investments vary from $96,400 to $147,000 with returns of 64% and 85% respectively depending on plant capacity. This project would also provide an excellent proving ground for the platinized titanium anode chlorate cell.

[fol. 1064] Objective

A proposal has been made to add enough sodium chlorate producing capacity to the new Niagara Falls chlorine plant to fill the chlorate requirements of the sodium chlorite plant. This report gives the results of a preliminary study of the technical and economic questions associated with the proposal.

Introduction

The soduim chlorite plant purchases about 120 tons of sodium chlorate per month from Hooker Chemical Co. and has plans to expand this consumption to 220 tons a month.

The Electrochemical Development Department has developed an electrolytic process for making sodium chlorate. This process eliminates the need for an expensive evaporator and solid sodium chloride handling facility as is required in the conventional process. In essence the electrolytic cell functions as an evaporator. The proposal assumes that sufficient voltage will be available after the new Niagara electrolytic chlorine plant is started, to operate the chlorate cells.

Technical Aspects of Chlorate Plant

A tentative design has been made for a 30,000 ampere chlorate cell. Only slight modification would be necessary

to make this cell operate at 33,000 amperes. Three of these cells would be used in parallel with the E-11 mercury cells. Three banks of cells, or 9 cells, are required to produce 120 tons of chlorate per month. Five banks would be required to produce 220 tons per month. The nine cells would require floor space approximately 10 ft. x 15 ft.

The chlorate plant would take chlorine plant purified brine and treat it with barium chloride to remove the sulfate present. The flow diagram is given in Figure 1.

The chlorate cell effluent is cooled in a small jacketed vessel with cooling water. Sodium chlorate crystallizes out of this solution. The slurry is then sent to a small filter where the liquid is separated from the chlorate crystals. The chlorate crystals are then dissolved to make a concentrated solution which is then pumped to the sodium chlorite plant. The cell liquor that was separated from the solid sodium chlorate is mixed with purified brine for return to the cells.

The cells operate at the boiling point of the electrolyte and the water introduced with the brine is evaporated by the heat generated by the cell.

[fol. 1065] The chlorate cell operates at a maximum voltage of 3.7 volts and for the purposes of this report it is assumed that the required eleven volts necessary to operate the chlorate cells will be available from the chlorine plant rectifiers. Eighteen volts would have to be available to operate five banks of cells to obtain 220 tons sodium chlorate per month.

A 140 ampere cell operating under the above mentioned conditions has been run in the laboratory for the past several months to prove the feasibility of this type operation.

Economic Aspects of Chlorate Plant

Investment:

Quotations have been received on the chlorate cell covers and on the cell bodies. In quantities of 100 these polyester covers cost $13,000 and the cell bodies cost $61,000. Quotations on the titanium anode assembly have not been received to date so the cost for this assembly is based on the cost of the quantity of titanium involved plus 20% of this cost for

fabrication. The calculated cost for 100 anode assemblies is $310,000. The total unit cell cost is $3,840 in lots of 100. Twenty percent has been added to this cost for lots of nine to give a cell cost of $4,610 not including platinum.

Platinum worth $3,880 ($83/troy oz.) is applied to the anodes in each cell. This amount of platinum should last almost two years. This brings the total unit cell cost to $8,490. $20,000 is the estimated cost of the auxillary equipment.

Cost estimates are made assuming no charge for rectifiers in one case and proportionate change in the other. This proportioning of rectifier cost is based on the ratio of kiiiowatt consumption required for the chlorate cells vs. the mercury cells. It is assumed that the original cost of the chlorine plant rectifier is $1,500,000. At 120 T/Mo. $NaClO_3$ this is $69,000 and $115,000 at 220 T/Mo. $NaClO_3$.

Total chlorate plant cost is $96,400 for 120 T/Mo.$NaClO_3$ without rectifier and $165,400 including rectifiers. For 220 T/Mo. $NaClO_3$ the investment is $147,000 and $262,000 excluding and including rectifiers respectively.

Raw Materials:

Salt	$4.62 per ton as purified brine from chlorine plant. 0.574 ton salt per ton $NaClO_3$ produced based on Vickers-Krebs estimates.
HCl	$0.0175/lb. 22° B'e Acid is OPD price. 30 lb./ton $NaClO_3$ is Vickers-Krebs estimate.
[fol. 1066]	$BaCl_2$ $0.09/lb. OPD price. 43 lb./Ton $NaClO_3$ based on amount required to precipitate all sulfate in purified brine.
CrO_3	$0.30/lb. OPD price. 2.7 lb./Ton $NaClO_3$ based on Vickers-Krebs estimate.
Platinum	$83/troy ounce OPD price of metal. 0.17 troy oz./ton $NaClO_3$ based on minimum platinum consumption measured by electrode weight loss in laboratory 140 ampere chlorate cell.

Utilities:

Electrolytic	$0.005 /KWH D.C. Unit consumption is 5100 KWH/T $NaClO_3$ based on 3.7 volts per cell and 83% current efficiency. There are no other utility charges used because they are so small.

Labor:

Operating	$2.40/hr., one man on days to check operation of plant.
Monthly	$3.40/hr. cell room or chlorite foreman spending 2 hours/day on chlorate manufacture.

Repair and Maintenance:

Labor	$2.45/hr. same maintenance per ton $NaClO_3$ as estimated by Vickers-Krebs.
Overhead	30% of repair labor.

Supplies and Miscellaneous:

$0.50/T $NaClO_3$ includes laboratory analysis.

Overhead:

Direct	Figured as monthly labor.
Indirect	100% operating labor plus 1.5% of investment per year.
Taxes and Insurance	1.25% of investment plus 9% of operation and repair labor.
Depreciation	6.67% of investment per year.

[fol. 1067] Gross Sales:

OMCC presently buys sodium chlorate from Hooker Chemical Co. for $161.80/Ton in OMCC tank cars. Tank car lease is estimated at $3.50 per ton giving a total cost of $165.30/Ton $NaClO_3$. Sales volume is 1440 and 2650 tons $NaClO_3$ per year.

Production cost estimates are worked out in Tables I-IV and Financial Criteria are given in Tables V-IX. A summary of these estimates is as follows:

	Production Cost $/T $NaClO_3$	Return on Investment	Pay-Out Period
120 T $NaClO_3$/Mo. without rectifier cost	73.34	64%	1.4 years
120 T $NaClO_3$/Mo. with rectifier cost	77.83	36.5%	2.3 years
220 T $NaClO_3$/Mo. without rectifier cost	67.58	85%	1.1 years
220 T $NaClO_3$/Mo. with rectifier cost	71.64	45%	1.9 years

Conclusions

The attachment of a chlorate plant to the Niagara chlorine plant is economically attractive. A 120 tons per month chlorate plant would provide the information needed to build a full scale chlorate plant as well as supply chlorate to the chlorite plant at a considerable savings.

Recommendations

1. It is recommended that a 4,000 ampere cell be made and tested with the rectifiers that are presently available at Niagara to determine the feasibility of the present chlorate cell design.

2. Alter the present 30,000 ampere cell design if needed as a result of the 4,000 ampere cell tests to obtain a working 33,000 ampere cell.

3. Begin detail engineering for the installation of 9 or 15 33,000 ampere chlorate cells and auxilliary equipment in the Niagara chlorine plant.

[fol. 1068] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 57

Chemicals Division
Capital Requirements
1960-1964—Incl.
(Ex. Organics)

[Extracts]

Exhibit
Plf. Osborne 2 for ident.
J. Birkhahn, Csr, 10/4/61

July 1960

[fol. 1069]

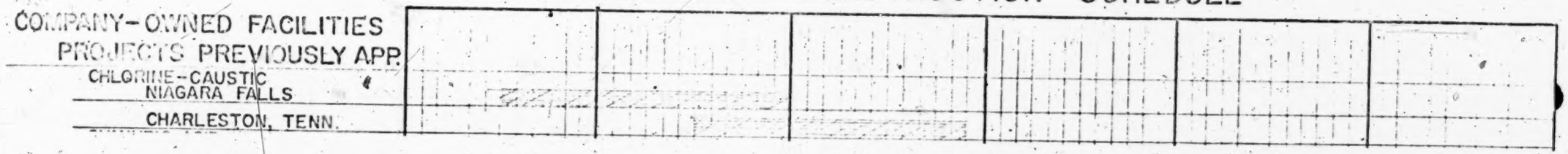
Chemicals Division

Economic Summary for Production Facilities
($000 Omitted)

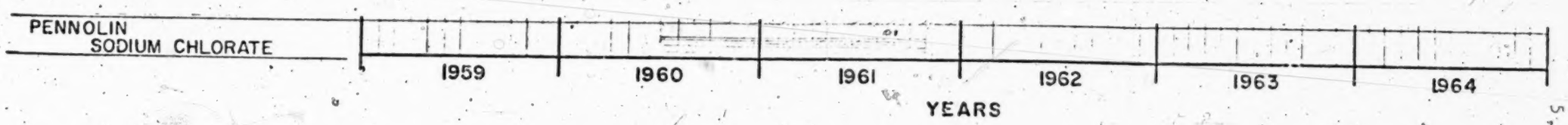
	Year of Completion	Net Outlay	Gross Investment	Net Sales	Net Profit	% of Net Sales	% Return on Gross Investment	Cash Profit	Cash [3] Recovery Period
Company-Owned Facilities									
Projects Previously Approved									
Chlorine-Caustic-									
Niagara Falls	1960	9,146	6,220	2,860	1,020	35.7	16.4	1,380	8.1
Charleston, Tenn.	1961	[1]1,575	11,575	6,208	1,230	19.8	10.6	1,807	7.8
New Projects									
Total Company-Owned Facilities									
Joint Ventures									
Penn-Olin-Sodium-Chlorate									
Total Joint Ventures	1961	7,254	7,179	3,945	669	17.0	9.3	1,044	8.9

CHEMICALS DIVISION

PLANT ENGINEERING AND CONSTRUCTION SCHEDULE



JOINT VENTURES



[fol. 1071] Chemicals Division—Industrial

Explanation of Capital Requirements

Caustic Chlorine—Niagara Falls

C.A.R. 172-052-4224 was approved in 1959 for the expansion and modernization of the Niagara Falls Chlorine plant. The expanded capacity will provide a total of 184 tons of chlorine and 212 tons per day of caustic. Construction will be completed during November, 1960. It is expected that the Plant will be in full operation by January, 1961, with added output committed.

The total expenditures for the modernization of the 25 cycle electric facilities and construction of the 184 ton per day electrolytic chlorine plant will not exceed the approved amount of $10,294,000.

Caustic Chlorine—Charleston, Tennessee

The continued availability of purchased chlorine and caustic from present outside sources is uncertain due to renegotiation of the Huntsville Leasehold at end of 1961 and efforts of Kaiser Aluminum and Chemical to develop joint ventures or captive uses for Gramercy chlorine concurrent with expiration of our present contract at the end of 1962. All of this purchased tonnage is moved at little or no profit. We have a letter of intent from Bowaters Southern Corporation covering sale of 24,000 TPA chlorine and 18,000 TPA caustic per year for 5 years commencing January 1, 1962 contingent upon construction of the Charleston facility. Letter of intent to be superseded by 5 year contract by August 1, 1960. These requirements together with increased sales in the Tennessee River area attributable to the Charleston plant result in an immediate and urgent need for new production facilities.

It is proposed to construct at a cost of $10,755,000, a new production facility with a capacity of 140 tons of chlorine and 161 tons per day of caustic, on land to be purchased near the Bowaters Plant at Charleston, Tennessee. The proposed unit would utilize the Mathieson developed E 11-F cell. The salt required for the operation of this facility would be delivered via barge from Louisiana. Electric power would

be obtained from the TVA system. Facilities would be provided for shipping the products by barge, rail and truck. Immediate approval of this project would allow initial operations by late 1961.

[fol. 1072] Sodium Chlorate—Penn-Olin

This project covers the construction of facilities to produce 25,000 tons per year of sodium chlorate. C.A.R. 172-001-377A and B were recently submitted for approval accompanied by complete supporting data. The figures contained in this report are based on C.A.R. 172-001-377B which we believe are realistic and attainable.

[fol. 1073]

Chemicals Division—Industrial

Capital Requirements
($000 Omitted)

	1960	1961	1962	1963	1964	Total
Company-Owned Facilities						
1. Approved projects included in previous "Whither" reports, approved at previous "Whither" meeting (latest cost estimate)						
Chlorine-Caustic-Niagara Falls	$8,646	$ 150				$ 8,796
Chlorine-Caustic-Charleston, Tenn.	1,000	9,755				10,755
(In Lieu of McIntosh Location)						
Total Item 1	$9,646	$9,905				$19,551

[fol. 1074]

Joint Ventures (1)						
Penn-Olin-Sodium Chlorate	1,000	5,504				6,504

(1) OMCC's capital investment would be reduced by the amount of any debt financing undertaken by these subsidiary companies.

[fol. 1075]

Chemicals Division—Industrial

Economic Evaluations for Joint Ventures
(OMCC's Interest 50% Thereof)—($000 Omitted)

	Penn-Olin Sodium Chlorate Plant
Gross Outlay for New Property	6,504
Less: Cash Recovery	—
Net Outlay for New Property	6,504
Receivables and Inventory	675
Moving, Severance and Other Expenses	157
Federal Income Tax Credit at 52%	(82)
Net Outlay to be Recovered	7,254
Gross Investment	7,179
Total Net Sales	3,945
Total Net Profit	669
% to Net Sales	17.0%
% Return on Gross Investment	9.3%
Cash Profit	1,044
Pay-Out Period—Full Production Rate	6.9
Pay-Out Period—From Start of Construction	8.9

[fol. 1076]

Year Money Required	1960
Construction Period	
Start	7/60
Finish	10/61

[fol. 1078] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 59

Mathieson Chemical Corporation
Mathieson Industrial Chemicals Division
Executive Offices, Mathieson Building
Baltimore 3, Maryland

May 25, 1953.

Logan here 6/2

Will prepare proposed agreement on Chlorine Dioxide and send to me before S12 leaves for West Coast.

Mr. W. P. Drake, Vice President

Pennsylvania Salt Manufacturing Company
1000 Widener Building
Philadelphia 7, Pennsylvania

Dear Bill:

Your note of May 22nd is very flattering in indicating a suspicion that we are taking all of your customers away but the facts do not support this idea.

Will be very happy to meet you in Philadelphia on June 3rd (Wednesday), or on Tuesday, June 2nd, if you prefer. Your note is slightly confusing in this respect.

If we can make it Wednesday, June 3rd, I will try to have our Chlorine Dioxide expert join us and we will plan to stop at your office sometime just prior to the noon hour.

Kind regards

Sincerely yours, J. O. Logan, Vice President—Director of Sales

JOL:rsm

Received May 27, 1953.

[fol. 1079] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 60

Penn Salt

Clear contracts, so no wires crossed.
Exchange our discussions between PS.

July 31, 1953.

Mr. John O. Logan
Vice President-Director of Sales
Mathieson Chemical Corporation
Mathieson Building
Baltimore 3, Maryland

Dear John:

Enclosed herewith are two copies of the Chlorine Dioxide agreement duly executed. Enclosed also is our check for $1,000.00 payable to you as advance royalty to defray initial expenses to be incurred by Mathieson under this agreement, such sum to be credited against the sums payable under Paragraph #4 of the agreement.

I am suggesting to Fred Shanaman that he have one of his people, probably Brian Shera, contact your Mr. Woodside to arrange for the latter's visit to Tacoma in the near future, at which time they can exchange the information agreed upon.

I too hope that the agreement will prove mutually beneficial.

Cordially yours, Wm. P. Drake, Vice President.

S12: Attached is one of the two executed copies available to us. Also, a copy of the agreement which Mathieson would make with a mill using their process. I thought it well to send our check at the time we returned the agreement to John Logan. If you feel that you would like to reimburse the Parent Company for a portion of this, at least, that will be up to you. Originally I think you talked in terms of paying for the whole of it, but the thought occurred to me that if we make use of this we should not ask you to stand the full amount. However, I will let you be the judge on that score.

I think it might be desirable to make sure that whatever [fol. 1080] contacts either of us has with anyone in the Mathieson organization be made known to each other so that we don't get our wires crossed. For example, I would hope that Brian Shera, or whoever talks with Woodside would keep accurate notes of the conversations because if at some time later Woodside talks with us back here it would be helpful to know what he discussed and how Brian had handled it on the West Coast. Naturally, we would give you a record of our discussions with Mathieson.

It will be some time probably before we pay them any royalties so we can work out the mechanics of that when the time arises.

——, ——.

WPD:m

[fol. 1081] Memorandum of Agreement made as of the 31st day of July, 1953, between Mathieson Chemical Corporation, a corporation of Virginia, and Pennsylvania Salt Manufacturing Company, a corporation of Pennsylvania, whereby, in consideration of the covenants hereinafter set forth, it is agreed:

1. Mathieson and Pennsalt agree to exchange technical data, information and know-how in the field of chloride dioxide generation from chlorates now owned or acquired during the term of this agreement, except for information that cannot be disclosed because of security classification by the United States Government. All such disclosures, to the extent that they are marked confidential at the time of disclosure, shall be maintained in confidence and shall not be disclosed to others, except as necessary to carry on the business of the parties, unless and until such information becomes public otherwise than by act or omission of the recipient.

2. Mathieson and Pennsalt each covenants not to sue the other or a licensee of the other in the below identified field for infringement of Letters Patent of the United States or Canada claiming improvements in the field of chlorine dioxide generation from chlorates based on inventions made before termination of this agreement.

3. Mathieson agrees to grant, to any responsible party engaged in the processing of pulp nominated by Pennsalt,

an immunity in the form annexed to this agreement upon the terms therein recited.

[fol. 1082] 4. Pennsalt agrees to pay to Mathieson the sum of fifty cents ($.50) per ton of sodium chlorate sold by it for the purpose of or sold by it and used for generation of chlorine dioxide. On or before the end of the first month following each anniversary of this agreement during its term, Pennsalt agrees to render Mathieson a written report of the sums payable as provided in this paragraph, and with each such report, to remit the payment due.

5. Pennsalt agrees to pay Mathieson upon the execution of this agreement the sum of One Thousand Dollars ($1,000) as advance royalty to defray initial expenses to be incurred by Mathieson under this agreement; such sum to be credited against the sums payable under Paragraph 4 hereof.

6. This agreement shall continue for a period of five (5) years from the date hereof and shall be extended for an additional period of five (5) years unless one party notifies the other in writing, within six (6) months prior to the end of the initial five (5) year period, of its election to terminate the agreement at the end of that initial period.

Mathieson Chemical Corporation, By E. R. Van Vliet, Vice President and Treasurer. Pennsylvania Salt Manufacturing Company, By Wm. P. Drake, Vice President.

Attest:

W. Winsor, Secretary.

Attest:

E. J. Harrington, Asst. Secretary.

[fol. 1083] In consideration of the obligation to pay the fees below stipulated, Mathieson Chemical Corporation, a corporation of Virginia, hereby covenants this day of , 1952, not to sue , a corporation of and any United States subsidiary of which said controls not less than fifty per cent of the stock entitled to vote for directors, for infringement of any United States or Canadian Letters Patent which it owns or under which it has the right to grant licenses without accounting to others premised on the processing of pulp and paper stocks

with chlorine dioxide and the generation or purification of chlorine dioxide for the processing of such stocks. Said shall pay and hereby agrees to pay a fee of Five Hundred Dollars ($500) per mill of not more than 110 tons (dry weight) per day of bleached stock capacity and One Thousand Dollars ($1,000) per mill of more than 110 tons (dry weight) per day of bleached stock capacity for each calendar year through the year ending December 31, 1962, during which pulp or paper stock is processed with chlorine dioxide in such mills; and thereafter no further fees shall become due or payable. Such fees shall be paid to said Mathieson Chemical Corporation at Ten Light Street, Baltimore 3, Maryland, within thirty (30) days following each calendar year for which such fee or fees are payable. This agreement shall inure to the benefit of the successors and assigns of the said and any United States subsidiary thereof as above defined.

Mathieson Chemical Corporation, By ——, ——.

(Seal.)

Attest:

——, ——

Attest:

——, ——

[fol. 1084] In United States District Court

Plaintiff's Exhibit 61

Pennsalt Chemicals

September 10, 1954.

Mr. W. F. Mitchell
F. A. Lucard

Sodium Chlorate

D11 W17

In connection with our interest in sodium chlorate at Calvert City, we are requesting estimates on plant size of 3,600 tons and 5,000 tons per year. In reviewing the files on this subject I find that Mr. Dodson had prepared estimates on this subject back in September 1951.

This is an important project in our present thinking and I would appreciate any expediting that can be done on this matter. I shall be happy to assist in any way possible.

——, ——.

faf/rbh

[fol. 1085] In United States District Court

Plaintiff's Exhibit 63

Pennsalt Chemicals

Grogan P-12-ID 9-26-61 L.
Subject: Sodium Chlorate Survey
Date: February 2, 1955
To: Mr. G. D. Grogan.
From: R. W. Wurst—Atlanta

The following paper mills are using or plan to use Sodium Chlorate and all of them indicated to me that they would be very interested in giving us consideration as a supplier if we had a plant at Calvert City.

Although they could not definitely promise me any certain percentage of their requirements, they did state they could see no reason why they should not buy from us. All said, Calvert City was an ideal location.

I did not know of our interest in Salt Cake when I started this survey, this product was not discussed and the tonnage figures shown were acquired after I knew of our interest.

Mr. W. H. Thornton, purchasing agent at St. Regis Paper, Pensacola, Fla. told me that many of the paper mills purchasing agents had a meeting several months ago with Solvay, Mathieson and Diamond to try and induce them to make Salt Cake primarily for the Southeastern paper mills. Nothing came of this meeting. Mr. Thornton said that he and his men would be happy to talk with any one from our company to offer any information we may require regarding Salt Cake. Also he feels certain that all paper mills would be interested in signing long range contracts commitments.

There are quite a number of paper mills in Mississippi, Arkansas, and Louisiana. However, these were not con-

tacted inasmuch as you had suggested that they be contacted by our St. Louis office.

All of the mills I did contact indicated that there is a definite need for a Salt Cake production aside from the material that comes from rayon manufacture and sulphuric acid manufacture as a by product. Although the Canadian production is alright, the delivered cost is usually about $10 to $12 per ton higher than the material produced in this country. Mr. Thornton at St. Regis said that he thought a price of $25.00 per ton f.o.b. works, meaning Calvert City, would be reasonable to all concerned.

With the competition so well entrenched in the southeast on caustic soda and chlorine, it seems to me that the only way we would be able to share in any of this business, will be to offer a product such as salt cake or sodium chlorate. If we can do this, it seems logical that we would then be in a much better position to share in the caustic soda and [fol: 1086] chlorine requirements.

Other plants I contacted but who do not use sodium chlorate nor have any plans to use are the following:

Ruberoid Company
Mobile, Alabama
National Gypsum Company
Mobile, Ala.
Stone Container
Mobile, Ala.
St. Joe Paper Co
Port St. Joe, Fla.
Custa Paper Co
Piscah Forest, N C
Virginia Pulp and Paper Co
Charleston, SC
International Paper Co
Georgetown, SC

The four(4) companies in Mobile Alabama and the Custa Paper Co are not prospects for Salt cake but the other companies are.

R. W.

[fol. 1087] P-12-C-10

Company	Liq. $NaClO_3$/yr.	Salt Cake/yr.
Intl. Paper Co., Mobile, Ala.	2000 tons	Have 9 plants
1. Moss Point, Miss.	3000 tons in 2 years	Estimate 150,000 tons
2. Natchez, Miss.		
3. Bastrop, La.		
Hollingsworth & Whitney		
Mobile, Alabama	Investigating process	?
Buckeye Cellulose Corp.	Will use soon	?
Foley, Fla.	See J. R. Goode, Memphis office for req.	
Rayonier Corp.	Large	?
Jessup, Ga.		
Fernandina Beach, Fla.		
St. Regis Paper Co.		
Jacksonville, Fla.	None	11,000 ton
Pensacola, Fla.	In 18 mo.-2 yrs. 1600 tons.	11,000 ton
Tacoma, Wash.	In 18 mo.-2 yrs. 1600 tons	
Hudson		
Hudson Paper Co.	Will use in 1956	
Palatka, Fla.	See Sam Mendoke N.Y.C. for Req.	?
Reigel Carolina Corp.	9000 ton	Small
Acme, N.C.		Use ash and sulphur
Brunswick Pulp & Paper	Plan to use late in 55	?
Brunswick, Ga.		
St. Marys Kraft	2 T/C /mo.	?
St. Marys, Ga.		
Union Bag and Paper Co.	Do no bleaching	35,000 ton
Savannah, Ga.	No prospect of $NaClO_3$ now	
Macon Kraft, Macon, Ga.	No Bleaching—no prospect	15,000 ton
Rome Kraft, Rome, Ga.	No Bleaching—no prospect	15,000 ton
National Container Co.		
Fernandina Beach, Fla.	No bleaching	
Coosa River Newsprint.		
Coosa River, Ala.	Looking into process	
Bowaters		
Calhoun, Tenn.	?	

[fol. 1088] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 64

Sodium Chlorate

February 18, 1955.

Mr. A. S. Woodard
Wm. P. Drake
G11: L14: L16

George Grogan says:

> "We certainly should be able to sell about 5,000 to 8,000 tons out of Calvert at a price of $8.25 per 100 pounds in tank cars, or $8.75 per 100 pounds in drums, less anywhere from 10¢-25¢ per 100 pounds freight equalization."

Since I believe you are studying this matter currently perhaps these figures will give you something to hang your hat on.

——, ——.

WPD:m

W17's memo 3/7, Sent to L14, L16

[fol. 1089] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 65

Pennsalt Chemicals

February 25, 1955.

Mr. Malcolm McDonald, Director of Purchases
The Champion Paper and Fibre Company
Hamilton, Ohio

Dear Mr. McDonald:

We are certainly interested to see that you expect to begin ordering Sodium Chlorate in May of this year at Houston and later on at Canton. Since the tonnage we have available from Portland is not extremely sizable and since the equali-

zation with Columbus, Mississippi, is somewhat less to Houston than to Canton, we would appreciate it very much if you would consider us in supplying your Houston requirements; we would have no difficulty taking care of them. Our present price on Sodium Chlorate in tank cars is $8.25 per 100 pounds, f.o.b. Portland, Oregon, freight equalized with Columbus, Mississippi; we understand that the present freight rate from Columbus to Houston is 89¢ per 100 pounds + 15% + 3%. Terms are 30 days net, and our quotation would be subject to our standard quarterly price adjustment clause—Clause 3—on the back of the attached contract form.

In order to take advantage of the lowest freight rates from Portland to Houston, it would be necessary for us to ship in 8,000 gallon tank cars, holding approximately 90,000 pounds of Sodium Chlorate. In view of the fact that your requirements at Houston would be around 2 tank cars per month, we would think that you would find the larger size much more satisfactory for your purpose since you would not have the labor and trouble of unloading tank cars quite as frequently as in the case of 4,000 gallon cars. I think you will agree that the general trend on all commodities handled in bulk is toward larger cars.

We appreciate very much the opportunity of quoting and will be in touch with you later regarding your final decision on this matter. I might add that our contemplated plant at Calvert City, Kentucky, is still in the figuring stage, but if there is any possible way to put one in and get a reasonable return on our investment, I feel sure we will do so.

Yours very truly, Pennsylvania Salt Manufacturing Co., G. D. Grogan, Manager of Sales, Industrial Chemicals Division.

GDG:k
D11,G5,S25

[fol. 1090] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 66

Pennsalt Chemicals

March 21, 1955.

Subject: Sodium Chlorate
Date: March 8, 1955.
To: Mr. W. P. Drake
From: A. S. Woodard
Copies To: G11-L14-L16

Based upon the capital cost information submitted by Mr. Shanaman in his letter of December 27th to you and previous manufacturing costs data obtained with respect to West Coast operations, we have reviewed the economics of manufacturing sodium chlorate at Calvert. At a selling price of $8.25/cwt, the return on the fixed investment for a 7200 ton/year plant at Calvert is between 7% and 10%. At the same selling price, return on fixed investment for a 12,000 ton/year plant, is between 10% and 15%. Without additional considerations of the possibility of perchlorate manufacture, potassium chlorate manufacture, herbicide formulations or pending change in price structure, we believe that the manufacture of sodium chlorate at Calvert is at best a marginal operation and should not be contemplated at all at capacities appreciably less than 12,000 tons/year.

Mr. Shanaman in his letter indicated that the capital cost of the process facilities would cost $2,904,000 with an accuracy of +0% —25%. Therefore, with the inclusion of process services, the capital cost for a 7200 ton/year plant will range between $2,500,000 and $3,326,500. On the same basis, the capital cost for a 12,000 ton per year plant will range between $3,560,000 and $4,773,000. You will note that the estimated range for a 12,000 ton/year plant embraces the reported cost of the Oldbury plant.

We have estimated that the manufacturing cost for sodium chlorate based on 17 years depreciation, varies between $5.60/cwt and $5.88/cwt depending upon the capital cost of the 7200 tons/year plant. The manufacturing cost for the 12,000 ton/year plant varies between $5.43/cwt and $5.20/cwt again at limits being determined by the capital

cost of the plant. Using Mr. Grogan's estimated selling price of $8.25/cwt in hopper cars, we have a net return from sales after S&A, freight allowances and hopper car rentals of $7.42/cwt. Thus, the extremes of the return on investment for the 7200 ton/year plant are 6.68% and 10.5%; whereas, those for the 12,000 ton per year plant are 10% and 14.9% respectively.

The order of accuracy of the capital cost estimates is not high; however, we are confident that the actual cost of the plant would fall within the range estimated. Since under these conditions the basic return for sodium chlorate manufacture is not attractive, we believe the expense of refining these figures further would be unwarranted.

A. S. Woodard

asw: jh

[fol. 1091] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 67

Sodium Chlorate

March 23, 1955.

Mr. H. C. Land
Wm. P. Drake

File given to L14 3/25.

S12

It appears that after once again reviewing the possibility of producing sodium chlorate at Calvert at the rate of 7200 tons per year, the return on fixed investment is much too small (7 to 10%) to warrant further consideration at this time. Even a 12,000 ton per year plant would only give us 10-15% return on fixed investment.

Knowing that you have coming up fairly substantial demands for sodium chlorate to the paper industry I imagine you will want to make arrangements with Fred Shanaman, or with someone else if he doesn't have it available, to supply these requirements.

I suggest you get in touch with Fred as soon as possible

to see what you might be able to work out with him. It might be that Fred could add to his facility at Portland a sufficient amount to take care of your requirements.

Please let me know how you work this out.

——, ——.

WPD:m

[fol. 1092] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 71

Sodium Chlorate

December 17, 1956.

Mr. F. C. Shanaman
William P. Drake
L9: L14: W1

This morning's paper announces the fact that Oldbury is now expanding its Mississippi plant. It is reported they added 5000 tons to capacity this past spring. They are now planning to add another 5000 tons.

On the face of it this makes us look kind of silly when we consider the number of times we have evaluated unsuccessfully the installation of a chlorate plant in the Southeast. I think we should plan to review this matter once again when you are East in January.

——, ——.

WPD:m

[fol. 1093] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 72

Pennsalt Chemicals

P. O. Box 1297—Tacoma 1, Washington

Subject: Sodium Chlorate
Date: December 20, 1956
To: Mr. W. P. Drake
From: F. C. Shanaman
Copies To: L9, L14, W1

Reference your memorandum of December 17, on the above, I have believed for a long time that we probably could profit considerably from the results of a thorough-going investigation into this particular chemical which we have been manufacturing successfully since 1941. I suggest that we make it a project to seriously investigate why we have passed up the opportunities to manufacture sodium chlorate elsewhere in the United States when these opportunities seemingly have been offered to us and when it has been an acknowledged fact that we perhaps have as much advanced information concerning the manufacture of sodium chlorate as anyone else. I urge you to appoint a committee of three to conduct such investigation and make a report to you of their findings within a matter of 60 days or less. My suggestions concerning this committee would be that it consist of Mr. Karr and Mr. More from the West Coast and Dr. LaLande at Philadelphia.

A report such as I have mentioned we could hope will bring out whether we know as much about sodium chlorate manufacture as we think we do and if so, why we haven't been able to set up plant or plants in other parts of the country rather than have our competition do so. Of course, it could be that we have been seeking a much higher return for our dollars invested by comparison with the rate our competition has been willing to accept. The question has been raised so many times and I believe we should have a

thorough investigation made so that the records will be put straight for any future reference we want to make to the same.

F. C. S.
or WPD

FCS/ep

[fol. 1094] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 73

Pennsalt Chemicals

Subject: Sodium Chlorate
Date: December 27, 1956
To: Mr. W. P. Drake
From: H. C. Land

In Ref To: Mr. Shanaman's letter to you dated December 20th.

Copies To: L9 S12 W1

I agree wholeheartedly with Mr. Shanaman's comments of December 20th. It should be helpful to know why we cannot justify a sodium chlorate plant in the east, especially since this product fits ideally into our product line. It is, of course, disconcerting to see Oldbury construct and expand a plant, and now to learn that Hooker intends to further expand its operation right in our own back yard.

We have reviewed figures on sodium chlorate many times and, specifically, on at least two occasions during the past two years. The figures for capital investment and plant cost reportedly were supplied by people on the west coast and reviewed to take into consideration the new improved chlorate cell. Each time the return on investment came very close to 10%, which is outside our capital investment policy. We all recognize that the cost of power is the most important single component of plant cost, and our studies indicate that we would have to purchase power for less than 3 mills per k.w.h. in order to obtain a satisfactory return. I do not know of any place in the east, where power can be bought today for this low figure, and you know that our power at

Calvert is costing about 4.25 mills. Incidentally, the last time we talked with Olin Mathieson about building a chlorate plant they told us they had investigated the possibility of building a plant in the east and that their cost figures, both capital and manufacturing, were surprisingly close to ours. You will recall that the latest idea is to build a plant in Puerto Rico and enjoy a tax saving; however, power there is in the neighborhood of 6 mills, which may be prohibitive.

It is entirely possible that Hooker is expanding their production in the east with the idea of increasing the selling price after they have become so thoroughly entrenched in eastern markets as to make it more difficult for another producer to enter the field.

H. C. L.

HCL:mk

[fol. 1095] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 74

Penna. Salt Mfg. Co.

Rec'd Jan. 24 1957. Industrial Chemicals Div.
Sodium Chlorate Plant in the East

January 22, 1957

Dr. W. A. LaLande, Jr.
W. Cooper Willits
D11-L14-K5-M32-S12

At a meeting held in the President's office today, attended by Messrs. Drake, LaLande, Land, Shanaman and Willits, a task force consisting of Dr. LaLande, as Chairman, and Messrs. Karr and More was appointed to submit a report on the above-mentioned subject to the President by March 1, 1957.

The purpose of the report is to determine for the last time the following:

1. Should Pennsalt have a position in the manufacture of chlorates in the East?
2. If so

(a) What should the position be?
(b) Where should a plant (if any) be located?
(c) What size plant (if any)?

3. If a plant cannot be justified in accordance with our capital investment policy, either alone or jointly with a partner such as Olin Mathieson, what should Pennsalt's position be in regard to chlorates in the East, and what will be Pennsalt's future in this field?

The tenor of the study is to find how we can do it rather than why we can't.

wcw/r

[fol. 1096] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 75

Pennsalt Chemicals

Subject: Sodium Chlorate
Date: January 22, 1957
To: Messrs. G. E. More and E. H. Karr
From: F. C. Shanaman

You may or may not recall that I suggested to Mr. Drake that we have a small committee or task force appointed for the purpose of reviewing available information concerning sodium chlorate as the same may relate to the building of a chlorate plant in the eastern part of the United States. It was my hope that such task force could make a report to end all reports, and to the end that we would either close our file or we would pursue more actively than ever before the idea of building a chlorate operation other than at Portland, Oregon.

At a meeting today, Mr. Drake appointed Dr. LaLande as chairman of the task force with you two fellows as the other members. It is hoped that the three of you will be able to get a report in such shape that it can be presented to Mr. Drake not later than March 1. We have a considerable

amount of information and I would suggest, in anticipation of meeting with Dr. LaLande, you get the facts in such shape that it will minimize the time which will have to be spent in conversation. I believe the hard part will be to judge what type of building would be required and what the costs for the same would be; what we estimate has been the investment requirement for the Oldbury plant in Mississippi and what their costs probably are per ton; also what the investment might be for American Potash's proposed 15,000 ton plant and what costs for product might result; what the market in the East is likely to be and to what extent we believe we can participate on a contract basis. I have no doubt but what we can, by pooling information and experience, come up with a reasonably accurate report within 30 days and I trust you will anticipate cooperating and working with Dr. LaLande to the extent necessary in the accomplishment of this objective.

F. C. S.

FCS:ram

[fol. 1097] In United States District Court

Plaintiff's Exhibit 76

Penna. Salt Mfg. Co.

Received Feb. 25, 1957, Industrial Chemicals Div

Chlorates
February 21, 1957
Dr. W. A. LaLande, Jr.
William P. Drake
L14: W1

Fred Shanaman reports that American Potash are building their new chlorate plant at Aberdeen, Mississippi, 27 miles from Columbia, Mississippi which, you will recall, is the location of the Hooker-Oldbury plant. American Potash are getting power at 4½ mills.

I thought this information would be helpful to you in the appraisal you are making of our chlorate position.

WPD:m

[fol. 1098] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 82

Pennsalt Chemicals

P.S.M. Co. Confidential

Subject: Sodium Chlorate Plant in the East—Report—Part I
Date: March 12, 1957
To: Mr. William P. Drake
From: W. A. LaLande, Jr. (for the Committee)
Copies To: K5, L14, M32, S12, W1

This is the first report on the assignment given to Messrs. Karr, More, and me during the meeting in your office on January 22, 1957.

Mr. Willit's letter of January 22 summarized the purpose of the assignment as definitive in developing answers to the following questions:

"1. Should Pennsalt have a position in the manufacture of chlorates in the East?

"2. If so,

a. What should the position be?
b. Where should a plant (if any) be located?
c. What size plant (if any)?

"3. If a plant cannot be justified in accordance with our capital investment policy, either alone or jointly with a partner such as Olin Mathieson, what should Pennsalt's position be in regard to chlorates in the East, and what will be Pennsalt's future in this field?"

The Committee (K5, L9, M32) met in Tacoma and Portland February 18-22 for a discussion of the assignment and the formulation of a report. It was decided that a two-part report would be necessary. Part I would present capital investment and return on investment data while Part II would cover the market potential for the product in the east and the other points in Mr. Willit's January 22 letter. It

was recognized that a policy decision by Management following analysis of Part I might result in a decision to abandon the project without further study.

[fol. 1099] Conclusions

1. Pennsalt's important position in sodium chlorate in the northwest has provided us with the manufacturing, selling, and technical service know-how required for the merchandising of this product. It would appear logical therefore for us to extend our position in the east provided we could be assured of a market potential of at least 15,000 tons per year. Actually, however, we now find ourselves considering being a late third entrant into the field at a time when many other projects are competing for the company's capital funds, and when competitive sodium chlorate capacity in the area is increasing.

2. Using Western Division's experience and operating data on sodium chlorate, Mr. J. B. Heitman at Tacoma developed for the assignment the following data for a 15,000 ton per year plant (minimum size) located at Calvert City.

Sodium Chlorate at Calvert City
15,000 Tons Per Year

Fixed Investment		$4,226,000
Working Capital		580,000
Cash	$ 50,000	
Inventories	200,000	
Accounts Receivable	330,000	
		$4,806,000

	Per Cwt.	Per Year
Net Sales	$9.0000	$2,700,000
Cost of Manufacture	6.2741	1,882,224
Gross Profit	2.7259	817,776
Sales and Administration	0.9000	270,000
Net Profit (before F.I.T.)	1.8259	547,776
Return on Fixed Investment, %	13.0	
Return on Total Investment, %	11.4	
Return on Net Sales, %	20.3	

A corresponding estimate for 15,000 tons annual production at another unspecified location where all necessary services would have to be supplied, i.e., where it [fol. 1100] would not be able to take advantage of various types of services already installed at Calvert City, produced the following figures.

Sodium Chlorate at a New Location
15,000 Tons Per Year

Fixed Investment		$4,828,000
Working Capital		585,000
Cash	$ 55,000	
Inventories	200,000	
Accounts Receivable	330,000	
		$5,413,000

	Per Cwt.	Per Year
Net Sales Price	$9.0000	$2,700,000
Cost of Manufacture	6.5228	1,956,852
Gross Profit	2.4772	743,148
Sales and Administration, 10%	0.9000	270,000
Net Profit (before F.I.T.)	1.5772	472,148
Return on Fixed Investment, %	9.8	
Return on Total Investment, %	8.7	
Return on Net Sales, %	17.5	

For a 20,000 ton per year plant at Calvert City the following data were derived:

Sodium Chlorate at Calvert City
20,000 Tons Per Year

Fixed Investment		$5,278,000
Working Capital		760,000
Cash	$ 60,000	
Inventories	250,000	
Accounts Receivable	450,000	
		$6,038,000

[fol. 1101]

	Per Cwt.	Per Year
Net Sales	$9.0000	$3,600,000
Cost of Manufacture	5.9732	2,389,284
Gross Profit	3.0268	1,210,716
Sales and Administration, 10%	0.9000	360,000
Net Profit (before F.I.T.)	2.1268	850,716
Return on Fixed Investment, %	16.1	
Return on Total Investment, %	14.1	
Return on Net Sales, %	23.6	

We believe the accuracy of our capital estimates is —0 - +10%; i.e., the facility might cost 10% more than the estimate, but not less. A considerable delay in construction of the plant would render the estimates invalid. In any case, re-estimating would be necessary for obtaining firm figures for an appropriation request.

We have used 4.25 mills per kilowatt hour for electric power.

We have used $0.09 per pound, in drums as the selling price. This is based on $0.08 per pound bulk, cl., +$0.01 per pound in drums. The actual total sales return

would, of course, depend on the breakdown between bulk and drum shipments, which we don't know now. Higher prices, which are likely, would improve the return, but freight equalizations might minimize the effect of this benefit.

3. Oldbury Division of Hooker operates a 10,000 ton per year sodium chlorate plant at Columbus, Mississippi and has announced a 12,000 ton per year addition to this plant. American Potash recently announced that it would install a 15,000 ton per year sodium chlorate plant at Aberdeen, Mississippi. The eastern capacity for sodium chlorate will then be 37,000 tons per year, excluding Oldbury at Niagara Falls. It is reasonable to assume that both Hooker and American Potash expect to sell this amount of sodium chlorate within a few years and that they are counting on at least some expansion in the future. The potential requirement for sodium chlorate in this area has not been determined by Pennsalt.

[fol. 1102] 4. Because the return on the investment on a minimum size sodium chlorate plant (15,000 tons per year) is considerably less than that required by our investment policy for this type of project (30% before taxes), it is first necessary for Management to consider an eastern installation of this chemical on the basis of investment return and available capital funds. It might be decided that this case can be considered an exception and that the return is acceptable and that new capital funds can be made available by the Company, or through outside financing (by borrowing more money or by forming a subsidiary with another company). Another approach requiring analysis would be the removal of other projects totalling approximately $5,000,000 from our plan and the substitution of this sodium chlorate project.

Recommendation

1. The Company's interest in this project should be reexamined on the basis of the data submitted in this report to determine whether Part II should be undertaken.

WAL:fn

[fol. 1103] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 83

Pennsalt Chemicals

P. O. Box 1297—Tacoma 1, Washington

Confidential

Subject: Sodium Chlorate Plant in the East—Report—Part I

Date: March 26, 1957
To: Dr. W. A. LaLande
From: F. C. Shanaman
Copies To: D11, M32, K5

Al, I have read contents of your initial report on the above with interest and also with disappointment. I found little in the report not known before and little to help the members of the Management Committee reach a decision as to where we go from here. I think the reason this is so is because members of your committee elected, for some reason unknown to the writer, to report on the estimated dollars required to build an operation and stopped at that point, whereas the most important part of the investigation is related to the reasons why the investment should be made or not made even if the return was expected to be less than company policy. I do not feel, therefore, that the report is sufficiently complete to accomplish what we expect. Until we know more about the market possibilities and what such investigation discloses relating to opportunities for outside financial participation and influence that a chlorate plant might have on long range relations with other companies, I don't believe we can intelligently judge where we should be going on chlorate in the East.

—, —

FCS:meh

[fol. 1104] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 84

Sodium Chlorate Plant in the East

March 27, 1957
File
W. Cooper Willits

D11-L14-K5-M32-L9-S12

At a meeting held in the President's office today, attended by Messrs. Drake, LaLande, Land and Willits, it was agreed that Dr. LaLande would be responsible for the preparation of a market survey covering chlorates in the East, to supplement Part I of his report of March 12 on Sodium Chlorate Plant in the East.

In the preparation of this survey, Dr. LaLande will be permitted to requisition any help that he may desire from within the Company. Dr. LaLande indicated that he would like to set up a team for this purpose, which would consist of a representative from Commercial Development, Industrial Division and Western Division.

It was agreed that the report would be completed within three months.

wcw/r

(June 30)

[fol. 1105] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 87

April 18, 1957.

Arthur D. Little, Inc.

Thirty Memorial Drive
Cambridge 42, Massachusetts

Mr. Robert Eastman
Pennsylvania Salt Manufacturing Company
Three Penn Center Plaza
Philadelphia 2, Pennsylvania

Dear Mr. Eastman: 1-2177

We are glad to have the opportunity to submit this proposal covering a market survey of sodium chlorate, as a result of your telephone conversation with R. F. Messing on April 16.

Objective

We understand that PennSalt is giving consideration to the possibility of manufacturing and selling sodium chlorate in the area east of the Rockies, and is interested in a review of prospects for participation in this field. The information would be utilized to assist the company's management in reaching a decision on the desirability of producing this material, the plant size, location, and sales outlets which would be necessary to implement the program.

Scope of Work

Our investigation relating to the market potential for sodium chlorate would involve a determination of the following characteristics of the industry.

1. Present producers, capacity, expansion plans, and possible new entrants to the field.
2. Market distribution, in terms of end uses, geographical location, type of market outlet, and growth potential.
3. Development of new uses and appraisal of impact of new technology on established uses.
4. Distribution channels, sales customs, technical support, types of packaging, and similar factors.

5. Price outlook, based on competition in the industry, demand-supply balance and similar factors.

[fol. 1106] Following this industry characterization, we will analyze and interpret the data in such way as to permit decision by PennSalt on the desirability of entering the field, the most promising areas for plant location, the marketing procedures required, and the plant capacity most appropriate for the market. The latter will, of course, also depend upon plant investment and cost factors, although we do not contemplate that these will be included in the present survey.

Proposed Approach

As a first step in this program, we will meet with you and your associates to discuss in greater detail your specific interests and to obtain any general background which would be available by virtue of your present position in manufacturing on the West Coast. We will then undertake to assemble pertinent background information from literature sources and from our files, as well as from Government agencies, trade associations, and others who might contribute useful background. Principal effort will then be placed on interviews in the consuming industries, with the attention focused in the following categories:

1. Agricultural
2. Paper
3. Chemical manufacturing, including perchlorates
4. Miscellaneous outlets.

Following collection of data from these sources, we will correlate and interpret the findings to provide recommendations on the most appropriate course of action for PennSalt. We will not reveal your identity during the course of this work but will bear in mind your interest in joint venture opportunities, so that these can be brought to your attention promptly as a first step to arrange a meeting between the parties concerned.

As is our custom, we will keep you in close contact with the progress of our work. Mr. Donald R. Gibbons will be in charge of the program, with the work to be handled on a team basis utilizing other personnel with appropriate backgrounds and experience. We understand that we will look

to you for direction and coordination of your company's interests.

Duration and Cost

We estimate that this activity can be completed within a period of three months from the date of your authorization. We propose that you authorize charges for PennSalt not to exceed $10,000, with out-of-pocket expenses to be billed in addition at cost to you. It is our usual practice to render invoices monthly as the work progresses.

[fol. 1107] General Provisions

Information of a confidential nature furnished to us by you will be treated in accordance with our established professional standards. Reports resulting from this assignment become your property, but our authorization is required if our reports are reproduced in whole or in part for use outside your organization. It is understood that neither party will use the name of the other for advertising or promotional purposes without prior permission.

This agreement may be terminated by either party on thirty days' written notice or within such lesser time after notice as we can conclude the work currently under way.

Acceptance

For the purpose of staff scheduling, all our proposals are made subject to prompt acceptance. If you would like us to proceed with this assignment, we would appreciate having the enclosed copy of this letter signed and returned for our file.

We look forward with interest to working with you and your associates.

Very truly yours, Arthur D. Little, Inc., John H. Adams, Contracting Officer.

John H. Adams/jhl

Enclosure

Accepted for Pennsylvania Salt Manufacturing Company.

By: ——. Date: —.

Title: ——.

[fol. 1108] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 89

Extract from—Management Committee Meeting No. 59
Date—April 26, 1957
Members Present—Messrs. Beale, Clem, Collins, Drake, Hull, Land, Shanaman and Willits
Members Absent—Messrs. Clark and LaLande
Also Present—Messrs. Tuttle and Penfield from 9 until 10 A.M.
Progress Reports on Major Objectives:
Sodium Chlorate Sales Expansion to Pulp Mills and Other Industries.

Sodium Chlorate Sales Expansion

Mr. Shanaman reported that considerable progress with respect to minimizing the importance of Chipman sodium chlorate purchases. Western Division has reduced their obligations under the Chipman contract sufficiently to have greater freedom of action saleswise than heretofore and also in the selection of the type of Chipman business to accept. Agriculturally speaking, Western Division is expanding its sales activity throughout the Middle West and has been successful in picking up additional uranium business in the Inter-Mountain territory. Sales have been increased to one pulp mill account, and negotiations are currently in progress with two others for a portion of their business this year or, if not successful this year, for at least 50% of same in 1958.

[fol. 1109] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 96A

P. S. M. Co. Confidential

Industrial Division

Received October 16, 1957, General Manager.

Subject: "Chlorates Opportunities East of the Rocky Mountains"

Date: October 16, 1957
To: Mr. William P. Drake
From: W. A. LaLande, Jr.

Copies: G27, L14(x), M93, S12(x), S44, W17, W1

Attached please find Technical Division's Commercial Development Department Market Study "Chlorates Opportunities East of the Rocky Mountains." The report includes the A. D. Little survey.

The "Summary and Conclusions" and "Recommendations" outlined in pp 2-12 of the report indicate that Pennsalt should consider supplying a part of the estimated required increase of 30,000 tons in sodium chlorate capacity (by 1962). The new production would be needed mostly for pulp bleaching and perchlorates manufacture.

Pennsalt's most recent figures (February 1957) for a 20,000 tons per year plant at Calvert City showed that a total investment of $6,038,000 would be required and that the return of this investment would be 14% (15 years depreciation). The return becomes 20% if the $0.01 per pound price increase referred to in the report is used in the calculations. We have not made estimates on the profitability of potassium chlorate and ammonium perchlorate production.

This project obviously requires discussion. A meeting has been arranged for Nov. 6—2:30 in the Board Room. All those receiving copies of this letter are requested to attend.

WAL:fn
Attachment

[fols. 1110-1111] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 96B

Markets for Sodium Chlorate East of the Rocky Mountains

Report to Pennsalt Chemicals Corporation

August 19, 1957

C-60819

Arthur D. Little, Inc.

[fol. 1112] I. Summary

A. Scope

In our survey of the sodium chlorate markets east of the Rocky Mountains, three fourths of our effort has been devoted to the use of sodium chlorate in wood-pulp bleaching; except for the trend toward the use of perchlorates in propellants, the other markets have not been explored in detail. Production and consumption in all but the pulp markets are treated on a national basis. Since we have not investigated the significant and probably growing market for sodium chlorate in the pulp industry of the Pacific Northwest, we cannot make an over-all recommendation on the pulp industry to Pennsalt.

B. Conclusions

The current U. S. sodium chlorate production capacity is about 72,500 short tons annually. By late 1958 this will reach 92,500 tons, of which 50,000 will be capacity east of the Rocky Mountains. American Potash & Chemical Corp. and Hooker Electrochemical Co. will have a combined capacity of 37,000 tons in Mississippi. The two plants are strategically located to supply most of the Eastern pulp industry's 1959 requirements, which will be about 46,000 tons.

Table I gives our estimate of the rate of consumption by the end of 1957 and 1962. The Eastern markets will total about 52,000 tons by the end of this year, and between 77,500 and 81,500 tons at the end of five years. On the limited basis of a regional supply and demand, there appears to be an excellent opportunity for another supplier in the East. Pennsalt should make a decision quickly; if it is affirmative, Pennsalt should publicly announce its plans, thereby forestalling expansion-minded competitors. At least three companies, including Columbia-Southern Chemical Corp. and Virginia Smelting Co., are investigating the domestic sodium chlorate market.

The generation of chlorine dioxide for wood-pulp bleaching is the largest market for sodium chlorate. The demand for better paper and paperboard has forced the pulpers to make brighter pulp, and the conventional chlorine, caustic, and hypochlorite bleaching process cannot efficiently achieve

the levels of brightness now in demand. Pulpers have had to turn to the use of either chlorine dioxide or hydrogen peroxide in conjunction with the conventional bleaching steps. The sulfate, the dissolving sulfate, and to a lesser extent, the soda and dissolving sulfite are the major pulping processes using chlorine dioxide. Peroxide is also used to bleach some of these types of pulp.

[fol. 1113] There is a controversy within the industry as to which of the two new bleaching processes is best. Each has its advantages and disadvantages. A chlorine dioxide bleaching step requires a large capital investment, while a peroxide bleach does not. On the other hand, most pulpers with whom we spoke contend that the cost of bleaching a ton of pulp with peroxide is about one dollar higher than with chlorine dioxide. Some authorities think peroxide minimizes color reversion after bleaching; others say that chlorine dioxide can bleach to a greater brightness. We believe that chlorine dioxide bleaching is the preferred process. However, if the price of peroxide is reduced—and it might be if Shell Chemical Company decides to move ahead with its plans for production—the economics of the two processes will become more competitive.

Twenty-five Eastern mills are now using chlorine dioxide. One expansion and seven new chlorine dioxide bleaching plants are being installed. We estimate that an additional eight mills will install chlorine dioxide by 1962.

The use of perchlorates as solid oxidizers in missiles is a second important factor of the growth in the demand for chlorates. But like most defense requirements, this market is unstable and hence unpredictable. In any event, perchlorates, particularly ammonium perchlorate, are the best oxidizers for solid propellants; in the unclassified documents we have read we have found no indication that better propellants are likely to be developed in the next five years. The trend toward the greater use of rocket-propelled missiles, and the trend toward solid propellants (because of their simplicity) in preference to liquid propellants indicate an increased demand for perchlorates. Only about one-fifth of the total U. S. perchlorate capacity is being utilized at present, but we have been told—within the limits of security restrictions—that the demand for perchlorates, of one type or another, may expand five- or sixfold during the next

five years. This could become an attractive outlet for a portion of a new plant's chlorate production. We have recommended that Pennsalt discuss the perchlorate situation with Thiokol Chemical Corp. and the Bureau of Ordnance of the Navy Department, after receiving security authorization.

If Pennsalt builds a sodium chlorate plant in the East, marketing will be an important factor. Because of the fine technical service and excellent products being offered by the two major suppliers of sodium chlorate to the pulp industry—Solvay Division of Allied Chemical & Dye Corp. (handling Ampot's products) and the Oldbury Division of Hooker Electrochemical—Pennsalt has little opportunity to gain a competitive advantage. On the other hand, it en- [fol. 1114] joys a good reputation in the pulp trade, it has the experience of the Northwest market to draw upon, and it has the Mathieson chlorine dioxide generating process. In addition, the judicious selection of a location for the new plant could help Pennsalt gain a stronger foothold in the Eastern pulping area.

Appendix A briefly surveys the range of U. S. industrial power rates that Pennsalt may expect to encounter. Appendix B provides information on the possibility of manufacturing sodium chlorate in Puerto Rico.

[fol. 1115] II. Production of Chlorates and Perchlorates

A. Chlorates

The United States began the large-scale production of sodium chlorate in 1925, with a capacity of about 4500 short tons. In 1933 two companies started producing potassium chlorate; prior to this date all potassium chlorate had been imported. World War II cut off imports, upon which domestic consumers had depended heavily; domestic production capacity then expanded rapidly to meet civilian and military requirements.

In 1940, the U. S. chlorate production capacity was 17,000 tons; by the end of 1945 it was 33,500 tons. During the war, direct military requirements—almost entirely for potassium chlorate—equaled 13% of the total allocations. Potassium chlorate for matches consumed about 70% of the total; exports accounted for about 10%. The production of potas-

sium chlorate reached a peak of 23,711 short tons in 1942. As Figure 1 shows, it has never reached this level since. The consumption of potassium chlorate now depends upon the match industry; the minor growth in this use and in miscellaneous uses is not expected to tax the present capacity in the foreseeable future.

After World War II, sodium chlorate steadily gained in importance, at first because of its growing use as a soil sterilant, and during the Korean emergency because it was a raw material for perchlorates. There was a slight drop in production during 1954, but production capacity and actual production have steadily climbed since then. This rapid growth has reflected a demand for sodium chlorate in the generation of chlorine dioxide for pulp bleaching, and this will require an even greater production capacity during the next five years. The total sodium chlorate production capacity was 67,570 short tons on January 1, 1955; now it is about 72,500 short tons. By 1959, the capacity will exceed 92,500 short tons annually.

There are four domestic producers of sodium chlorate: American Potash & Chemical Corporation; Hooker Electrochemical Company; Pennsylvania Salt Manufacturing Company of Washington; and Cardox Corporation, a division of Marmon-Herrington Company, Inc. Table II gives their plant locations and their estimated sodium chlorate capacities. The first three companies also produce potassium chlorate. The available potassium chlorate capacity probably exceeds 20,000 tons, but the utilized capacity is expected to remain at about 10,000 tons annually through 1962.

[fol. 1116] Over the last 30 years several other companies, including National Electrolytic Co., North American Chemical Co., Diamond Alkali Co., and International Mineral & Chemical Corp., have been in and out of chlorates and/or perchlorates. Columbia-Southern Chemical Corp. (a subsidiary of Pittsburgh Plate Glass Co.) and Virginia Smelting Co. have been rumored to be interested in entering the domestic sodium chlorate market. On July 30, 1957, Pittsburgh Plate's Canadian subsidiary, Standard Chemical, Ltd., announced its plans to produce sodium chlorate at its plant in Beauharnois, Quebec.

B. Perchlorates

Perchlorates are of primary interest to the military services for their oxidizing properties in composite propellants and to a much lesser extent, in pyrotechnics. Toward the end of World War II the Henderson, Nev., sodium and potassium perchlorate plant was put into operation, greatly expanding U. S. production capacity. The potassium perchlorate was used in JATO units. After the war, production declined to a very low level until the advent of the Korean emergency. In 1950, U. S. production of potassium perchlorate equaled 1818 short tons. It increased to 4370 tons in 1951, again primarily for JATO units (and partly for boosters and sustainers in solid-propellant rockets). By 1954, with the Korean emergency almost over, production slipped to 826 tons. The decline was accelerated by a shift in government interest from potassium perchlorate to ammonium perchlorate, principaliy because the latter is relatively smokeless. Like potassium chlorate, potassium perchlorate will probably never regain its former importance; the present production capacity is more than ample to meet the foreseeable demand.

Ammonium perchlorate has become the most important perchlorate. The requirements for smokeless JATO units, and more important, growing need for solid-propellant boosters and sustaining rocket motors for missiles will consume increasing quantities of ammonium perchlorate in the defense program. The production capacity is estimated at 16,500 short tons annually; current production is about 3500 tons annually. Ampot is the only domestic producer.

The production of lithium perchlorate and perchloric acid is at present negligible. Table III lists the perchlorate producers.

[fol. 1117] C. Producers

1. American Potash & Chemical Corporation

Ampot entered the chlorate market by virtue of its acquisition of Western Electrochemical Company in November 1955. Western Electrochem first produced chlorates in a small plant in Los Angeles in 1941.

The increased demand for chlorates during the war necessitated the conversion of part of the Henderson, Nev., plant of Basic Magnesium, Inc., to chlorate production. The

magnesium cells were removed and replaced with Schumacher chlorate and perchlorate cells. The plant, which was under the control of the Defense Plant Corporation, was in operation by July 1945. Within one month, with the arrival of V-J day, the plant was closed down. In February 1946, Western Electrochem leased the Henderson plant and put it back into operation. The Los Angeles operation was then closed down.

The facilities that Ampot inherited from Western Electrochem consist of two plants, the original one and one built during the Korean emergency. Ampot owns outright a sodium chlorate plant having an estimated annual capacity of 23,000 tons. It occupies and operates a government-owned sodium chlorate plant under contract from the Navy. This plant, with an estimated capacity of 7200 tons per year, supplies sodium chlorate in solution to a Navy-controlled sodium perchlorate plant, which in turn supplies the necessary raw material to the Navy's small potassium perchlorate plant and some raw material to the Navy's ammonium perchlorate plant (its capacity is 14,500 tons per year), which was built in 1953. Ampot has its own sodium and potassium perchlorate plants, and we believe that it has a 2000-ton-per-year ammonium perchlorate pilot plant. The company is also producing pilot-plant quantities of lithium perchlorate.

Ampot has announced plans to construct a 15,000-ton-per-year sodium chlorate plant at Aberdeen, Miss., at an estimated cost of $5 million. This plant is scheduled for completion in mid-1958. Without question it is being built to supply the growing pulp-bleaching market in the Southeast.

As Ampot completes its integration of Western Electrochem into the corporate structure, it is very likely to push the sale of chlorates and perchlorates more aggressively. At present, Chipman Chemical Company, Inc., markets most of Ampot's sodium chlorate going to the agricultural markets. The Solvay Division of Allied Chemical & Dye Corporation sells Ampot's sodium chlorate to the pulp industry. Ampot handles all the other markets. Although we [fol. 1118] have no evidence to confirm our views, we believe that as soon as it is practical to do so, Ampot will try to sell direct to the pulp industry without Solvay's help.

2. Hooker Electrochemical Company

Like Ampot, Hooker is a relative newcomer to the chlorate business. It entered this market by the acquisition of Oldbury Electro-Chemical Co. in November 1956. Oldbury claims to have installed equipment for the electrolytic production of chlorates and perchlorates in 1899. It has chlorate and perchlorate production facilities at Niagara Falls, and a new sodium chlorate plant at Columbus, Miss. Oldbury was controlled for many years by Albright & Wilson, Ltd., of Oldbury, England. (When Oldbury merged with Hooker, it severed connections with an affiliate company, Electric Reduction Co. of Canada. This company was also controlled by Albright & Wilson. While the matter is beyond the scope of this report, it is worth mentioning that Electric Reduction produces sodium and potassium chlorate at Buckingham, Quebec, and has just completed a $5 million sodium chlorate plant at North Vancouver, British Columbia. Electric Reduction is reputed to have a sodium chlorate production capacity of 24,000 short tons annually.)

Oldbury has been an important supplier of potassium chlorate to the match industry for many years. In fact, the company is believed to have been intimately involved in the match cartel prior to World War II. During the Korean emergency Oldbury was actively negotiating with the Army to build and operate an ammonium perchlorate plant. This step was never taken; the company still does not produce ammonium perchlorate, although its chlorate and perchlorate line is complete in every other respect.

Under Hooker, Oldbury's products can be expected to be more aggressively merchandized. Mr. Fred H. Berggren, formerly assistant sales manager of Oldbury, has been appointed supervisor of chlorate chemicals by Hooker.

3. Pennsylvania Salt Manufacturing Company of Washington

Pennsalt of Washington is the third most important producer of sodium and potassium chlorate. For obvious reasons no further discussion of this company is necessary.

[fol. 1119] 4. Cardox Corporation

Cardox Corporation, a company specializing in carbon dioxide, both for fire extinguishers and as a nonexplosive

means of fragmenting coal for easy mining, produces chlorates at Claremore, Okla. Most of its production is used captively as a heating element in its CARDOX tubes. These tubes are heavy-walled containers for carbon dioxide under pressure. At one end of the tube is a rupturable metal diaphragm leading to exhaust ports. At the other end is an electrically heated wire embedded in a chlorate or perchlorate mixture, which rapidly heats when energized. The compressed carbon dioxide then rises in temperature and expands; as the pressure rises the disk ruptures, and gas escapes rapidly. This expansion, in the confines of the hole drilled into the coal seam, breaks the coal into large lumps.

Cardox also uses its sodium chlorate for the production of chlorine dioxide decahydrate. When kept below the freezing point, the decahydrate provides a convenient way of storing and shipping chlorine dioxide. It finds modest markets in the bleaching of flour.

Cardox has little influence on the sodium chlorate markets of interest to Pennsalt, and we have no indication that it is interested in entering those markets.

D. Imports and Exports

Before World War II, imports were an important factor in the overall market for chlorates. For example, in 1899 over 1400 tons of potassium chlorate were imported; by 1927 imports had reached 6700 tons. Lesser quantities of sodium chlorate were imported. Total chlorate imports steadily declined (except during the latter part of World War II), as Table IV shows.

Current chlorate and perchlorate imports are at a level comparable to that of 1946, but they account for less than 2% of total U. S. capacity. Detailed import figures for 1956 are also given in Table IV. Stockholm Superfosfat Fabriks AB of Sweden and Lonza Ltd. of Switzerland are probably responsible for the largest import volumes. The Swedish firm's ammonium perchlorate is acceptable for propellant applications. One of the major U. S. propellant manufacturers is trying to obtain approval from the Department of Defense to use this source. The perchlorate is being quoted by the Swedish Company at 30¢ per pound, delivered in New York. This compares very favorably with the

price (38½¢ per pound fob Henderson, Nev.) that the Navy is paying Ampot.

Exports of chlorates and perchlorates from the United States are not reported. They are believed to be quite minor in the over-all market.

[fol. 1120] This projects a 50% increase in usage by 1959 and another 12% increase by 1962. As we have said, the growth of chlorine dioxide bleaching will continue after 1959 and 1962, but it will do so at a reduced rate.

D. Marketing and Distribution of Sodium Chlorate to the Pulp Industry

1. Suppliers

There are now two major suppliers of sodium chlorate to the pulp industry east of the Rocky Mountains: (1) American Potash and Chemical Corp., which is selling through a contractual agent, the Solvay Division of Allied Chemical and Dye Corp.; and (2) the Oldbury Division of Hooker Electrochemical Co. To the best of our knowledge Ampot has no field salesmen selling sodium chlorate to the pulp mills.

Both Solvay and Oldbury have established strong positions. We believe that because it can supply more know-how on the generation of chlorine dioxide, Solvay has an advantage over Oldbury and a large share of the business. Since paper mills are generally anxious to have a second source of supply, they tend to distribute their business between the two.

The Foley, Fla., mill of Buckeye Cellulose Corp. has recognized Pennsalt as a supplier of sodium chlorate, but most of the mill people contacted do not know that Pennsalt produces sodium chlorate or that it is interested in pulp bleaching.

Other companies were occasionally mentioned as being interested in entering the production of sodium chlorate and selling to the pulpers. Two examples are Columbia-Southern Chemical Division of Pittsburgh Plate Glass Co., and Virginia Smelting Company.

2. Products

The process for the manufacture of sodium chlorate has been thoroughly developed, and it is possible to produce

high-quality material of a consistent composition over a long period of time. Competition based on product quality is therefore considered almost impossible. A new company entering this market could not expect to exceed the quality of its competitors.

[fol. 1121] One point of interest, however, has come up in recent months: the new Mathieson technique for the addition of sodium chloride to the chlorate in the generator. This technique has been described in the technical journals and tested at a number of the mills contacted. Because of the varied opinions presented in our field discussions, we feel that the real value of chloride addition in increasing the yields of chlorine dioxide has yet to be demonstrated. If some technique such as this were to be proved as effective as claimed, a new supplier offering it as a better product characteristic would have a means of improving his market position.

3. Technical Service

Technical service as a merchandising tool for selling sodium chlorate to the pulp industry has been handled most uniquely. At the initial stage of the development of the chlorine dioxide generating process, neither of the two leading concerns (Mathieson and Solvay) holding process patents was a seller of the principal raw material, sodium chlorate. They obtained revenue from their developments by charging royalties on the use of their process. This practice was soon abandoned, and both companies now provide free technical service to pulp mills interested in generating chlorine dioxide.

The technical service is excellent. It includes all stages of assistance from inception on. To the best of our knowledge, neither Mathieson nor Solvay includes any oral or written tie-in agreement for the sale of either chemicals or equipment with its technical-service efforts. Since both are producers and sellers of chlorine, caustic, sulfuric acid, and other pulp-mill chemicals, however, they expect some of these materials to be purchased from them.

Several individuals are looked upon as outstanding authorities on chlorine dioxide generation and bleaching. One of these men, John Schuber, is employed by the Solvay Division. Dr. H. W. Rapson, Professor of Chemical Engi-

neering at the University of Toronto and leading pulp-bleaching consultant to the paper industry, is under contract to Oldbury to provide technical consulting service to its customers. Of the two companies, we believe that Solvay may have a more active and effective technical-service division. These people are headquartered at Syracuse, N. Y., and are available for visits to pulp mills whenever required. Solvay has sent as many as five men to a mill for a period of a week or more on the occasion of a startup or some serious operating difficulty.

[fol. 1122] Oldbury offers a less complete technical service staff and relies heavily on the services of Dr. Rapson. A customer having difficulty or questions about chlorine dioxide generation or bleaching can obtain the services of Dr. Rapson by contacting personnel in Oldbury's technical department.

Mathieson also maintains a technical-service department, which operates from Baltimore and is believed to be comparable to or perhaps slightly more effective than that maintained by Oldbury. To the best of our knowledge, Mathieson has no arrangement with an outside consultant similar to Oldbury's arrangement with Dr. Rapson.

4. General Industry Purchasing Practice

Sodium chlorate is a standard industrial chemical of moderate volume importance to pulp mills. To them its most important aspect is that there be a good assurance of supply. An inability to obtain sufficient material would mean the shutting down of a bleach plant, and if an integrated mill were involved, possibly the shutting down of the paper machines. For this reason, most purchasing agents split their sodium chlorate purchases between Solvay and Oldbury.

Sodium chlorate is shipped in tankcars carrying approximately 80-90,000 lb, in dry crystalline form. Since the moisture content is low and of little importance to the pulp mills, they do not check for it with each shipment. The consensus among the purchasing agents we contacted was that when the sodium chlorate arrives it is approximately 0.5% moisture. This figure checks with the suppliers' specifications, which indicate a purity of 99.5%. The tankcars, used

only for the shipment of the chlorate, may be owned by either the vendor, the railroad, or the purchaser.

We made a specific effort to determine ICC shipping regulations for sodium chlorate and to verify whether they were being adhered to by the industry. We found that a general ICC shipping regulation (No. 103 and 103W), concerning chlorates as a category, states that if these materials are to be shipped in tankcars they must be wet down with water to 10% of their weight. Superseding this regulation because it is more specific is one dealing with chlorate of soda. It states that chlorate of soda can be shipped in tankcars or in tight, sift-proofed hopper cars; it does not mention wetting down the material. Therefore we believe that it is *not* necessary to wet down sodium chlorate for shipment and that wetting down is not an established practice in the industry. The reference for the above information is Campbells Tariff #9, item 73.163 (7).

[fol. 1123] The contracts under which sodium chlorate is sold are standard industrial-chemical contracts. They generally run for one year, with quarterly price-adjustment clauses, and are not considered binding by either the vendor or the purchaser. Sodium chlorate is sold to the pulp industry on terms of fob shipping point, with freight equalized. As we pointed out in Section II-C, there are now four producing locations for sodium chlorate, each of which serves as a freight-equalization point.

Certain aspects of the practice of selling sodium chlorate on a freight-equalized basis may be of some interest. The purchasing agents of several mills stated that they might be interested in giving a part of their chlorate business to a new supplier if that supplier were to cause a favorable shift in the freight-equalization base-point situation as a result of its plant location. To force the other suppliers to recognize such a shipping point, it would have to make sizable shipments. By strategically locating a chlorate plant with an eye to the freight rate, a new supplier could strengthen its initial position in the market.

5. Value of Full Product Line

Our field contacts among pulp-mill purchasing agents and operating personnel indicate that a new supplier of

sodium chlorate will not gain much by offering a full line of pulp-mill and bleaching chemicals. As long as the supplying company has a satisfactory reputation in the pulp industry, it makes little difference whether it is able to provide one or more pulping chemicals. One purchasing agent stated that such a product line might actually work to the supplier's disadvantage, since his company does not like to place an excessive dollar volume with any one supplier. The fact that a potential new chlorate supplier was already accounting for a large dollar volume might be justification for its not being given the chlorate business.

However, one possibility might become interesting if the use of a chlorine dioxide bleaching stage followed by a hydrogen peroxide bleaching stage were to grow. It might be advantageous from a supply and from a technical standpoint for a company to sell both sodium chlorate and hydrogen peroxide (a chemical already offered by Pennsalt in small quantities), perhaps because the company handling both might well be able to develop experience on which to base improved technological approaches to these two phases of the bleaching sequence. If a company decided to offer both chemicals and were the first to do so, it might well claim to have the most advanced know-how in the combined use of the two stages. We believe that it would thus have an excellent basis for entry into the market.

[fol. 1124] 6. Prices

Prices for sodium chlorate vary little throughout the country. We obtained the following price information in our survey of the various geographic regions:

Solvay—8.25¢/pound fob shipping point (Henderson, Nev.)

Oldbury—8.15¢/pound in sellers' tankcars, fob works
—8.09¢/pound in buyers' tankcars, fob works

The only noticeable difference is that a purchaser can obtain a small reduction by providing his own tankcars. We have no reason to believe these prices will change within the next two years.

7. Pennsalt's Reputation in the Pulp Industry

We were asked specifically to determine Pennsalt's reputation in the pulp industry, and to obtain information on the reaction to Pennsalt's removal of itself as a supplier of chlorine. To the best of our knowledge, the company enjoys a satisfactory reputation; it is looked upon as a reputable and successful supplier of industrial chemicals, and there is no antagonism toward it as a corporation. It was clear that few of the people we contacted were aware of Pennsalt's interest in sodium chlorate on the West Coast. As we have said, one mill contacted in the Deep South purchases chlorate from Pennsalt.

8. Problems of Entering a Small, Well-Established Market

The outlook for the future consumption of sodium chlorate by the pulp industry is favorable. The primary problem facing a company entering this business is that of competing against two firmly established suppliers. As we have indicated, both Solvay and Oldbury have highly developed technical-service facilities and a great deal of information on chlorine dioxide generation and pulp bleaching. A new supplier might provide a technical-service facility equal to that offered by the present suppliers, but it might find it difficult to surpass them. The fact that a new supplier had a background in this field in another part of the country—as Pennsalt has—might not be well known in the new market areas.

[fol. 1125] There are several other ways in which a company could establish itself: It might build up a topnotch technical-service group, to provide a product equal to those already on the market and to have an active sales force calling on pulp mills regularly. Certainly Pennsalt's arrangement with Olin Mathieson would help it enter the market. A third possibility might be the development of some improvement in chlorine dioxide generation or pulp-bleaching techniques—one that could be carried out in existing equipment. It must be remembered, however, that mills will be reluctant to make major changes in their installed chlorine dioxide systems without very strong justi-

fication, because of the large investments they have already made. Nevertheless, any such process improvement might enable the new company sponsoring it to gain a firm foothold in the industry.

If any of these three approaches were to prove effective, the new supplier could gain a satisfactory share of the market. This share would partially depend on the acceptance of the process innovation or technique. The industry seems to feel strongly that a new supplier would need some "added attraction" to obtain more than a token portion of the existing chlorate business.

[fol. 1126] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 96C

Pennsalt Chemicals
Technical Division
Commercial Development Department

10/16/57.

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[fol. 1127] Introduction

Western Division entered chlorates manufacture in 1941. In subsequent years, particularly in postwar years, growth of National markets frequently stimulated Pennsalt to consider manufacture and sale in the East. The record is not clear on reasons for abandonment of these studies. In the early 1950's the company held a certificate of necessity under option for about eighteen months during the Korean emergency but decided not to proceed. More recently, a specific venture in Puerto Rico was considered but then deferred.

In early 1957, Mr. Drake directed that a study be undertaken to determine for the last time the positive means, if any, that Pennsalt should employ to establish for itself a position in the manufacture of chlorates in the East. An initial economic analysis shortly thereafter reported marginal profitability for such a venture at Calvert City and another Eastern location for 15,000 tons and 20,000 tons per year capacity. As a supplement to that analysis, Mr. Drake directed that a market survey be undertaken.

In preparation for this survey, an audit was made of our existing knowledge and experience in marketing and markets of chlorates and perchlorates. Many segments of the company contributed. The Western Division provided major assistance, particularly in pulp and paper, in agricultural uses, and in the lore of these commodities. From this audit it was apparent that major effort should be directed to pulp and paper markets. For a number of reasons, primarily shortage of personnel and desire for anonymity, bids were solicited from two major consultants, and from these A. D. Little, Inc. was hired. They directed their major efforts to pulp and paper, making field calls on all major companies East of the Rockies. Lesser effort was placed on perchlorates, on matches, and the minor markets. In agricultural markets, they were directed to provide only file reference information from other A.D.L. surveys. Our Western Division provided us and maintains, in our opinion, the very best current information on this market.

The results of A. D. Little's study are bound into the attached report. Findings should be evaluated as:

pulp and paper— high degree of reliability, checks with and elaborates on private information provided by Western Division. The only major controversial area is the future position of low cost peroxide.

[fol. 1128]

agricultural— forecasts are consistent with Western Division thinking; detailed information and knowledgable appraisal by A.D.L. is lacking.

perchlorates— reliability restricted by need for access to classified information. Better perspective and appraisal subsequently provided in classified report by Technical Division.

other uses— reliability sufficient for gross growth analysis.

forecasts of demand and capacity—A.D.L. tabular estimates were corrected, amended, amplified and analyzed by Market Research Section.

I. Survey Objectives

This market study was conducted to determine the extent of Pennsalt's opportunities to establish a position in the Eastern chlorates markets.

II. Summary and Conclusions

A. Sodium chlorate is a growth chemical

During the period 1945 through 1955 sodium chlorate production increased from 20,000 tons to 56,000 tons at the average rate of twelve percent per year. Demand in 1957 and 1962 is estimated at 67,000 tons and 117,500 tons respectively. These estimates indicate a continuation of the twelve percent average annual growth.

B. Sodium chlorate prices are due to increase

The price of sodium chlorate will increase in all categories $0.01 per pound by June, 1959. An increase of one-

half cent is expected by mid 1958 to be followed by an additional one-half cent by mid 1959—this represents a total increase of about eleven percent.

[fol. 1129] C. The sodium chlorate market is well diversified

At the present time sodium chlorate has four major uses —the manufacture of chlorine dioxide for wood pulp bleaching, the direct application as an agricultural herbicide and defoliant, the manufacture of potassium chlorate for matches, and the manufacture of perchlorates as fuel oxidizers in rockets. There are many minor uses and a few unpredictable but promising new uses—in the processing of uranium and vanadium ores, in the production of battery grade manganese dioxide, and in the manufacture of Pennsalt's PF (perchloryl fluoride).

Historically, the sodium chlorate end-use pattern has shifted about every five years with the growth of new uses.

Approximate End Use Patterns

(Percent of total sodium chlorate production)

Use	1940's	1952	1954	1957	1962
Chlorine dioxide bleaching	0%	4%	30%	52%	50%
Potassium chlorate	40	21	18	12	8
Herbicide & defoliant	45	52	45	26	17
Perchlorates	5	12	2	6	23
Others	10	11	5	4	2
	100%	100%	100%	100%	100%
Total $NaClO_3$ production, tons	—	40,000	40,000	67,000	117,000

Principal growth during the 1957-1962 period is expected to come equally from the increased use in producing chlorine dioxide for pulp bleaching, and in manufacturing perchlorates for fuel oxidizers in solid propellant rockets.

D. Sodium chlorate markets are regional

Seventy-five percent of the National market for sodium chlorate and its derivatives is east of the Rocky Mountains. About fifty percent of the National market or sixty-five percent of the Eastern market is in the Southern States. No significant change in this distribution is expected through at least 1962.

[fol. 1130] The geographic concentration of new producers and consumers, particularly in the pulp and paper industry, tends to favor a Southern plant location to minimize transportation costs on this freight equalized chemical. The need for cheap electrical power tends to further limit possible plant sites.

Calvert City, Ky., appears to be a good location which is about as far North as is economically feasible. A good alternative site probably exists on the Southern edge of the TVA power area in Louisiana, Mississippi, Alabama, Georgia, or Tennessee.

A completely different alternative appears to exist in an offshore site in Puerto Rico. Here it appears to be a problem of balancing tax advantages against freight and power costs with the latter probably controlling. Relatively cheap (7.5 mill) power may be available.

The possibilities of a Canadian operation appear to have been pre-empted by Canadian producers with well distributed plants whose total capacity is about two-thirds of U. S. planned capacity. On the other hand, Canadian producers do not appear to offer threats of invading U. S. markets under current tariff (¾¢ per lb.) and freight rates.

E. Two markets dominate the growth for sodium chlorate in the East

Of the total 35,000 tons increase in Eastern demand, 1957 to 1962; pulp and paper and perchlorates represent 31,000 tons.

Demands for chlorate in the chloride dioxide *bleaching of pulp* is expected to increase in the East from 30,500 tons 1957 to 51,500 tons by 1962. Twenty-five mills are currently using this bleaching process. In addition one expansion and seven new installations will shortly be completed. By 1962, an additional eight mills will install generation facilities. Attesting to the strength of demand for bleached stock is the fact that chlorate demand has not slackened despite the generally depressed condition of the pulp and paper industry. Current producers and suppliers appear to be well aware of the potential for this and related markets in view of their timely announcements and on stream plans for expanded and new capacity in the South (Hooker [fol. 1131] and American Potash respectively). Backed

by strong technical service crews, Solvay and Mathieson merchandise and engineer their respective generating systems and generally handle a wide variety of customer problems despite the fact that Solvay is a chlorates resale agent for Ampot and Mathieson does not sell the product. Companion products are the key to this keen competition, particularly in the South. Chlor-alkalis, ammonia, soda ash and hydrogen peroxide requirements continue to be viewed by the mill purchasers as alternatives for apportioning a balanced share of business among competitive suppliers. Although chlorine dioxide demand is expected to continue to increase and dominate the high brightness field, hydrogen peroxide may pose some threat if major price cuts develop. No agreement now exists among users or among suppliers on the extent, if any, of this possibility. Technical advantages are not yet apparent; economics would require justification for pulp mills to mothball relatively new generating and treatment equipment valued at $1,000,000 to $3,000,000 per mill to shift to peroxide. No trend is yet apparent for mills to delay plans for new chlorine dioxide generators. The follow through demand appears to be strongly in favor of chlorine dioxide.

The chlorates requirements for *perchlorates (expressed as ammonium salt) in newer military uses* will increase from the current 3,000 tons per year to 27,000 tons by 1962. These needs will be about evenly split East and West if the military realizes its objective to establish a second corporate source of supply in the East. Existing capacity is 20,000 tons of the sodium perchlorate intermediate of which 18,000 tons is considered economic. Navy owns 6,000 tons capacity and American Potash 12,000 tons with the latter operating both plants. Capacity for conversion of this intermediate to various salts is 16,500 tons for ammonium, 5,500 tons for potassium, negligible for lithium. Of this conversion capacity 14,500 tons ammonium is considered economic. This plant is Navy owned—American Potash operated. Process improvements in type anode and in cell design to be completed under Navy sponsorship in 1958 are expected to result in major revisions of existing plants. This coupled with the expected increase in military demand will create an opportunity for new producers to enter this field particularly in the East at no great disadvantage. The apparent

capacity increase needed to meet 1962 requirements is about 9,000 tons sodium perchlorate and conversion capacity 12,500 tons ammonium salt. Should the Navy choose not to [fol. 1132] continue to own capacity, an additional 6,000 tons sodium chlorate and 14,500 tons ammonium would be available for private ownership.

The military's estimates of their perchlorate requirements appear to be sound. Based on consumable needs, the material will be used by the three services in a wide variety of devices whose propulsion systems are not readily susceptible to replacement by other non-perchlorate system. Mobilization and stockpile requirements are not included nor are the needs for developmental testing. Furthermore, the majority of the capacity to process and utilize the perchlorates is already installed. Greater uncertainty exists, however, in establishing the needs for particular salts or perchlorates. Current preference is for the ammonium salt, but replacement of all or part of this by the lithium salt is possible over the next two to four years. Development programs are underway. However, the military is not yet certain that lithium salts will be accepted on a wide scale. Performance advantages may be offset by the substantially higher costs and by the greater technical and engineering problems of handling and fabrication.

F. Additional sodium chlorate production capacity is needed

In view of projected 1962 demand and currently estimated capacity (117,000 tons and 87,000 tons respectively) there exists a need for 30,000 tons additional National capacity.

Analysis of Eastern demand versus capacity in 1962 (87,800 tons and 45,000 tons respectively) indicates a need for 42,000 tons of new Eastern capacity. However, since the 1962 Western capacity of 42,000 tons exceeds projected Western demand by 12,000 tons it can be assumed that Western plants, Ampot and Pennsalt, will absorb the freight penalty and "export" their 12,000 tons excess into Eastern markets. If the Eastern producers accept and permit this invasion of their natural marketing areas, the net Eastern sodium chlorate deficit is reduced to 30,000 tons. This 30,000 ton deficit offers several possible manufacturing combinations.

[fol. 1133]

Estimated Captive Versus Merchant Demand for Sodium Chlorate

Market Area	Sodium Chlorate Demand, As Such, Tons	Sodium Chlorate Equivalents, Demand in other forms, Tons	Totals Tons
Eastern			
1962	64,000	23,000	87,000
1957	41,000	11,000	52,000
Increase	23,000	12,000	35,000
Southern			
1962	43,000	12,000	55,000
1957	27,000	2,000	29,000
Increase	16,000	10,000	26,000
U. S. A.			
1962	79,000	38,000	117,000
1957	53,000	14,000	67,000
Increase	26,000	24,000	50,000

Inasmuch as potassium chlorate and perchlorates are not now manufactured on a major scale east of the Rocky Mountains, as much as 23,000 tons of the needed capacity could be converted captively to these upgraded forms to supply the projected total 1962 Eastern markets for these chemicals. Of this, about 12,000 tons could be converted to supply Southern markets. It should be noted that about thirty-two percent of National, twenty-six percent of Eastern, or twenty-two percent of Southern sodium chlorate consumption is captively used to produce saleable upgraded chemicals. In addition to these conversion opportunities as much as 23,000 tons will be needed in the expansion of direct use markets in the East for sodium chlorate.

In view of these alternatives, manufacturing combinations for a new producer range from sodium chlorate exclusively for merchant sale through sodium chlorate exclusively for captive conversion.

G. Pennsalt can obtain a sound chlorates position in the East

Pennsalt enjoys a unique combination of assets which would facilitate entry into the manufacture and sale of chlorates and perchlorates east of the Rocky Mountains.

[fol. 1134] 1. Pennsalt of Washington has engineering and operating experience in the commercial production of sodium and potassium chlorates. In addition, laboratory scale work has been conducted in new processes for perchlorates using a platinum covered tan-

talum anode, and in recovery of platinum. Further, Technical Division has developed a new lead dioxide anode for more economic manufacture of perchlorates.

2. Pennsalt personnel have practical familiarity with the current technology on the major uses for these chemicals—wood pulp bleaching, weed killing, defoliating, and classified rocket fuel applications.

3. Pennsalt's sales personnel are successfully marketing companion products (ammonia, caustic soda, chlorine and hydrogen peroxide) to the major sodium chlorate consuming industry, the pulp and paper industry.

4. Pennsalt has an assured initial sales base with certain Eastern accounts; for example, 5,000 tons of sodium chlorate annually to Chipman for herbicide uses.

A reasoned estimate of Pennsalt's 1962 eastern USA sales of chlorate chemicals is 25,000 tons of sodium chlorate equivalents after three operating years.

Chemical	1962 Sales, Tons		Sodium Chlorate Equivalent, tons
Sodium chlorate			
Pulp and paper	10,000		
Agriculture	5,000	15,000	15,000
Potassium chlorate			
Matches	4,000		
Pyrotechnics	400	4,400	4,000
Perchlorates (Ammonium, etc.)			
Propellants	6,000	6,000	6,000
Total			25,000

These estimates were made without the benefit of sales [fol. 1135] management guidance and should therefore be considered as a planning base only pending more accurate sales forecasts.

H. Timing of entry and announcement is important

All projections tend to indicate that sodium chlorate supply and demand will be in balance at 87,000 tons per year in early to mid 1959. It appears that a new Eastern producer should plan to start-up no later than early 1959 with full operation being scheduled for early 1962, three years later. Interim large scale operations may well be possible at the competitive expense of the Western producers.

There is every indication that present manufacturers know the market potential. They have shown a fine sense of timing in planning and announcing expansions. In view of both the competitive situation and the tight time schedule indicated, an early decision on an Eastern chlorates venture is needed. This decision should be made public as soon as possible to pre-empt a share of the market. At least three other companies including Columbia-Southern and Virginia Smelting are known to be studying similar ventures.

III. Recommendations

The recommendations of this report follow as answers to the questions posed in the original directive for this study (ref. W-1 memo to L-9 1/22/57):

1. "Should Pennsalt have a position in the manufacture of chlorates in the East?"

Yes. This venture offers Pennsalt an opportunity to exploit on a National basis know-how and technology now confined to Western Division operations and to our accumulated assets from past R & D programs. Further, it provides an opportunity to expand upon our established sales position in the East by extending sales of companion products to territories not now being intensively covered. Manufacture of chlorates also provided an opportunity for manufacture of perchlorates, which in turn would provide us with a long sought entry into chemicals for the rockets and missiles industry. Finally, manufacture of chlorates would permit us to further expand and more fully utilize [fol. 1136] our Calvert City facilities, or alternately, it could provide the nucleus for operations at a new plant site.

2. "If so,

(a) What should the position be?"

The minimum position would be to manufacture and sell sodium chlorate. A further opportunity exists to produce potassium chlorate. A major, but more speculative opportunity exists to produce ammonium perchlorate and other salts required for military needs.

(b) "Where should a plant (if any) be located?"

Ultimate determination of exact plant site can come only after final decision has been made on the particular products to be produced in such a plant. Further, power and transportation to markets to be served, and in a special case, tax advantages are important determinants.

From the point of view of market centers Calvert City appears to offer a real advantage, particularly if we are to attempt to penetrate the North Central and the Northeastern pulp and paper markets. Calvert City would also presumably provide an advantage if we were to market potassium chlorate to the match industry, whose major market appears to be on the arc from St. Louis eastward up the Ohio River. A deep South plant site on the periphery of TVA power ranging from eastern Georgia through Arkansas would provide particular strength for marketing to the pulp and paper industry. Several mill purchasers would find a new basing point to work to their advantage. Furthermore, this Southern area would be desirable if we were to enter perchlorates. A special situation may well exist in Puerto Rico. Water transportation costs might provide an advantage over more northerly locations. Tax advantages could prove to be substantial. Public power rates, on the other hand, are believed to be prohibitive. However, with the substantial increase in industrial activity it is very likely that a proper combination in partnership with other companies could yield low cost power and steam. It is quite possible that the military would not view Puerto Rico with favor if we were to consider perchlorates manufacture there.

[fol. 1137] (c) "What size plant (if any)?"

A 25,000 tons plant for manufacture of sodium chlorate appears to be justified from our market research findings. Of this total capacity 15,000 tons is visualized going on a direct sales basis to industry; 4,000 tons could be utilized to produce the potassium chlorates, and 6,000 tons could be utilized to manufacture perchlorate salts for defense needs. Should the latter two ventures prove to be either uneconomic, or in the final analysis too speculative, the recommendation is that a base plant of 15,000 tons be considered

primarily to service the pulp and paper industry (10,000 tons per year) and agricultural uses (5,000 tons per year).

These recommendations, from a marketing research point of view, can be considered conservative estimates. In fact, if the forecasts are correct, an additional 5,000 tons will be required in the Eastern market area by 1962. Further, if a producer were to aggressively seek the full share of the Eastern market available, an additional 12,000 tons might be gained at the expense of the Western producers selling in the East. Therefore, the recommended total capacity is approximately 17,000 tons below what could be considered full growth potential for the Eastern markets through 1962.

From another point of view, a substantial reduction in perchlorates demand below that now forecast could reduce the estimates in Eastern markets by as much as 12,000 tons, which would have the effect of leaving 5,000 tons unfilled potential in the East.

3. "If a plant cannot be justified in accordance with our capital investment policy, either alone or jointly with a partner such as Olin Mathieson, what should Pennsalt's position be in regard to chlorates in the East, and what will be Pennsalt's future in this field?"

The answer to this question is beyond the scope of this market study. We were instructed not to seek or investigate special situations, such as partnership with Olin Mathieson, or with any of the major consumers, or with the Government. Further, this answer can be provided only by a detailed, realistic economic analysis. We recommend [fol. 1138] specifically:

1. Product, plant, and marketing cost estimates be made for the various possible plant combinations utilizing more recent price and market information of this report and the latest technology available within our organization and from the Government. Further, marketing costs should be determined from the ground up on an incremental basis rather than as a percentage of sales. Particular attention should be given to the marketing and distribution economies realizable through selling our full line of products to the Southern pulp and paper industry. Special attention should be given

to the cost for establishing and maintaining a strong technical service force.

2. Specific to perchlorates we recommend that conversations be initiated immediately with the Government to determine near-term opportunities for our Western Division to participate in the expanding needs of the perchlorates program, and ultimately the opportunities of an Eastern operation to meet the 1962 requirements.

[fol. 1139] Some Comments on Solvay Sales, Application Research and Technical Service in the Pulp and Paper Field

Aims of Sales and Technical Service Effort:

Solvay has a large and highly competent technical service team operating in the pulp and paper field. They back-up the full line (generally non-technical) salesmen operating in limited geographical areas who handle sales to pulp and paper mills.

A rough estimate of Solvay sales to the pulp and paper industry is $12,000,000 to $18,000,000 per year. Their present participation is great in New England, New York, the South, Minnesota, Wisconsin, and Ohio, but relatively small on the West Coast and in Canada.

Although a major portion of Solvay paper technical service effort is directed toward the design and installation * of chlorine dioxide bleach units, the actual sale of sodium chlorate is a relatively minor goal. Sales and technical service aims are, in rapidly decreasing order of importance:

1. To hold or improve the sales position at the pulp mills on four very important Solvay products:

chlorine; soda ash; caustic soda; hydrogen peroxide

(This is probably more important than all the other aims put together.)

2. To trade against bag reciprocity. Many of Solvay's largest customers are large factors in the multiwall bag industry. They are fighting violently to gain or increase

* Technical help only, not a construction contractor.

participation in Allied's bag purchases. Expensive technical service work by Solvay has held off a large part of this pressure to divide purchases to a point where they would have no position with any supplier.

3. To collect commission on chlorate sales. American [fol. 1140] Potash pays Solvay a commission on all (?) sodium chlorate going into Solvay ClO_2 bleach units. This commission may be as high as 15%. Solvay views this commission as a means of partially defraying engineering and other costs in installing chlorine dioxide bleach units for customers of ash, caustic, chlorine, etc. Chlorate is shipped direct from Ampot stock to the customer. Solvay does no warehousing, but does handle billing and credit.

4. To help General Chemical sell Sulfuric Acid and Alum. Plants using Solvay ClO_3 units units are requested, but *positively not pressured* into buying the H_2SO_4 they need from General Chemical Division. This is never pressed, however, when some ash, caustic, or chlorine business might be lost.

5. To help Nitrogen Division sell Methanol. When Solvay first entered the ClO_2 business they sold methanol from the South Point, Ohio plant and pressed very hard for this since it was considered more profitable than chlorine or alkalis. Since the spin-off of Nitrogen Division there has been very little interest in helping Nitrogen move their alcohol.

Solvay Sales Force—Covering the Pulp and Paper Industry

Solvay Process Division has about ninety field salesmen operating under thirteen branch sales offices. Those that have over one-third of their sales in the pulp and paper industry are indicated below by State of operation and age.

State	Age	
Maine	26	
New Hampshire	60	
New York (City) Branch	66, 32*	All non-technical or B.S. men who went into Sales right after college and/or the Service
New York (State—Syracuse) Branch	66, 38*	
New York Executive Office	60, 48*	
Philadelphia	45	
Florida	46*	
Texas	55, 45*	
Wisconsin	52	
Minnesota	58	

* Possibly less than one-third of sales here

[fol. 1141]

West Coast	Hardly any sales here except through jobbers and brokers (do not equalize on soda ash, caustic and chlorine)
Canada	Brunner Mond sells Canadian produced soda ash, Allied International sells U. S. production
Mexico	Jobber and broker

Solvay Technical Service Organization—Pulp and Paper Section

The Pulp and Paper Section of the Solvay Technical Service Organization is probably its best. They are well known in the field and welcome in most of the mills. A brief description of their ages and duties at full manning are indicated:

1. *John Schuber*, Manager (age 55)—John is a technical leader in the pulp and paper field. He has a first name friendship with the executives and operating personnel of most of the mills. He often consults free of charge on plant location, machinery purchases, etc.

2. *Don Batchelor* (36)
3. *Ed Nissen* (33)
4. *Dave Clark* (32)

These are Mr. Schuber's field men. In collaboration with two or more men from R. & D. they consult on engineering work, etc. and then take up residence at a paper mill for several weeks during the later stages of installation and the start up of ClO_2 bleaching process. (No charge is billed to the customer). They are thoroughly familiar with mill practices and some of them have worked in paper mills during the early stages of their careers.

5. *Bill Kraske* (36)—Bill was John Schuber's right-hand man. He left Solvay to join Celanese a few years ago because he and his wife objected to the amount of travel involved in his work.

6. *Ted Swain* (33)—a really effective young technical service man, especially useful on complaint adjusting.

7.-10. Four chemists—often lent by R. & D. to Technical Service to reside at the mill during ClO_2 start ups.

[fol. 1142] 11.-15. Four or five technicians.

Relations with American Potash & Chemical

Very little information is available. From time to time, before the Hooker merger, Solvay spoke to Oldbury about

chlorate distribution. Ampot appears to give good delivery service but does not visit the accounts. It is not impossible, however, that Pennsalt in the East might be able to arrange with Solvay for representation on a partial supplier basis. After all, Solvay is currently asking mills to operate under a very unsound purchasing policy—namely—to purchase total requirements from a single supplier of a material that is produced by only three companies. Solvay would never hesitate to use this argument as a means of getting into an account where they were not currently participating.

Application Research and Technical Service Laboratory

At the Syracuse soda ash plant Solvay has a large well-equipped pulp laboratory which is staffed by four or five technicians together with a team of four chemists who have become experts in ClO_2 plant installations. These latter men work on application research problems when they are not in the field on ClO_2 plant installations. The laboratory is strong in pulping and bleaching but is not equipped to do too much work in papermaking.

[fol. 1143] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 97

Plaintiff's Land Exhibit 6

Chlorates—East
November 8, 1957
Mr. G. R. Lawson
H. C. Land
B24 G11

For many years we have felt that we should manufacture chlorates in the east as a chemical to be sold to pulp and paper accounts. As you know, we are now selling some of the Portland production, although this is not on a sustained basis.

Mr. Grogan has felt very strongly about such a plant and has had preliminary discussions with people such as Olin-

Mathieson on the possibility of a joint venture. I am sending you a copy of the recent market study which points out that we have underestimated the amount of chlorate that can be sold in the east. The only way we are going to be able to justify a plant at Calvert City or other suitable location is to be able to sell to customers in the neighborhood of 15,000-20,000 tons per year. I believe that based upon this market study you may be able to forecast sales of this order of magnitude within a 3 to 5 year period after plant facilities were finished, provided that we could promptly initiate a sales program based upon material from the west, backed up with a definite commitment for plant facilities in the east. I would like to have you and your people review this market report and give me an estimate of your probable sales to customers.

In addition, I think we must consider the possibility of using 5,000 tons per year of chlorates in the manufacture of perchlorates, although I do not need your comments on this phase of the work.

——, ——

HCL:mk

[fol. 1144] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 98

Plaintiff's Grogan Exhibit 4

Sodium Chlorate
November 15, 1957
Mr. G. R. Lawson
G. D. Grogan
B24, J4

Based on the Sodium Chlorate figures presented in the Arthur D. Little Report, I should think that by 1959 we could sell 7,000 tons and by 1962, 15,000 tons to the pulp and paper industry in the southeast and southern states. This is based on the following assumptions:

1. We would have a plant by the end of 1958.

2. Additional technical service personnel and laboratory backing would be required.
3. The plant would be located in the southeast
4. The present consumers of Sodium Chlorate in this area are not tied up on long-term contracts.
5. Some arrangement to take advantage of the Mathieson system of chlorine dioxide generation or some similar arrangement is in effect.

I don't think that the sales estimate in the report pertaining to Potassium Chlorate—4,000 tons for match manufacture—is at all realistic.

GDG:k

[fol. 1145] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 99

Subject: Chlorate Opportunities East of the Rocky Mountains—Market Study Report
Date: November 18, 1957
To: Mr. R. W. Sloan
From: R. J. Eastman
Copies: D-11, S-12, L-9, L-14, W-1, M-93, W-17, S-44, G-27, E-27

On Wednesday, November 6, 1957, a meeting was held to discuss the subject market study report dated October 9, 1957. Attending were:

Shanaman, F. C.	LaLande, W. A.
Land, H. C.	Willits, W. C.
McCoy, G.	Woodard, A. S.
Sloan, R. W.	Gall, J. F.

Eastman, R. J.

1. L-9 reviewed the history of Pennsalt's sodium chlorate considerations pointing out the relatively low return on investment. The best return, about 20%, is on a 20,000 ton per year plant. The calculations include the projected 1¢ per pound price increase, but do not include any allo-

cated portion of the current fixed investment at Calvert City.

S-12 pointed out that Ampot's new plant fixed capital investment is about $350.00 per annual ton, and that Hooker's plant cost about $315.00 per annual ton. S-12 believes Pennsalt could construct a sodium chlorate plant for no more than $300.00 per annual ton. L-9 pointed out that current estimates indicate a cost to Pennsalt of about $320.00 per annual ton.

2. The projected price increase discussed on page 2 of the subject report was examined. S-12 reiterated his belief in this projected increase and attributed it to general market conditions and Hooker's desire to realize a better return on its estimated $19.8 million purchase price for Oldbury*.

3. The basis for estimating a 30,000 ton increase in Eastern sodium chlorate demand during the period 1957-1962 was discussed. S-12 expressed the opinion that Western producers could not economically compete for Eastern markets, and that the Colorado/Kansas area would be the probable East/West dividing line. This lack of Western [fol. 1146] "importation" into Eastern markets increases the projected sodium chlorate deficit by 12,000 tons to a total of 42,000 tons (see page 6 of the subject report).

4. With respect to the direct sale of sodium chlorate in the East, L-9 asked L-14 whether Industrial Division Sales could capture this expanding market. L-14 stated that Industrial Division could capture from 5,000 to 8,000 tons of the existing sales and some portion of the expanding demand, particularly in the pulp and paper industry. L-14 requested additional time to enable his people to analyze the sales potential in more detail (see pages 8 and 9 of subject report). In addition to this 5,000 to 8,000 tons, S-12 has stated his belief that Pennsalt could sell as much as 5,000 tons per year into the Eastern agricultural markets through Chipman (see page 8 of the subject report). The total immediate sodium chlorate market available to Pennsalt appears to be from 10,000 to 13,000 tons per year. To this must be added some portion of the 21,000 tons per year projected growth for pulp and paper markets in the East.

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* 450,000 shares of Hooker's stock at $44.00 per share.

5. The captive conversion and sale of products based upon sodium chlorate were discussed. Potassium chlorate was considered briefly, with S-12 stating his belief that Pennsalt had little opportunity to sell potassium chlorate in the East. This requires more discussion.

6. Ammonium perchlorate was discussed in detail at the request of L-14. G-27 stated that the Government projections of ammonium perchlorate demands as presented in the subject report were recently confirmed to him by the U. S. Navy. These projections are virtual commitments for the years 1958, 1959, and 1960. For the years 1961 and 1962 the estimates are less firm but probably represent minimum needs. Whereas earlier information from the Navy used in the subject report showed their preference for an Eastern plant site, G-27 reported that more recent Navy thinking would tend to indicate a preference for a new plant in the West.

G-27 reported that no Government funds are available for perchlorates plant construction, but that "encouragements" would take the form of a two-year purchase contract. The possibility of obtaining a Certificate of Necessity was not discussed.

S-12 stated that Western Division's Portland Plant could divert 2,000 tons per year of sodium chlorate for the manufacture of perchlorates. From past experience, this production of ammonium perchlorate at Portland could probably start in late 1958.

Consensus was that ammonium perchlorate prices would probably have to be reduced from the current 38½¢ per pound, due to the pressure for price reduction by the Navy's [fol. 1147] captive ammonium perchlorate plant. G-27 and S-44 stated that the Navy is expecting lower prices, but that the exact level is unknown. L-14 observed that the perchlorate situation was less firm than he had believed.

7. The order of magnitude of the total investment in a chlorate/perchlorate venture indicates that Pennsalt would probably need a partner. Olin Mathieson and others may be interested.

8. All persons attending the meeting agreed that timing is an important consideration in this proposed venture. S-12 and L-14 pointed up the importance of timely action in securing a position in the pulp and paper industry. G-27

and S-44 cited the growing industry interest in supplying perchlorates for Government needs.

9. Next steps to be taken:

a) L-14 will prepare firm sales estimates from the data in the report.

b) L-14 will explore the partnership idea with Olin Mathieson.

c) W-17 will prepare up-dated cost estimates. These estimates will be for 25,000 to 30,000 ton per year sodium chlorate plants at existing plant sites. Rough estimates will be prepared for a 6,000 ton per year ammonium perchlorate plant.

d) W-1 will prepare a study based upon some form of partnership with 50% of the capital requirements being borrowed at 6% interest.

e) When these studies are completed a second meeting will be held.

RJE/AKK RJE

[fol. 1148] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 100

Subject: Sodium Chlorate—Eastern Plant
Date: November 19, 1957
To: Mr. William P. Drake
From: W. A. LaLande, Jr.
Copies: G27, L14(x), M93, S12(x), S44, W1, W17

The attached letter from W17/L9, November 19, 1957 gives the data requested of Technical Division in the meeting on November 6.

WAL:fn

Attachment

[fol. 1149] Copy

Subject: Chlorate Plant—Estimates
Date: November 19, 1957
To: Dr. W. A. LaLande, Jr.
From: A. S. Woodard

As requested, by extrapolation of the data contained in Mr. Heitman's reports of February 8th and February 20th on chlorates, we have estimated the capital cost, manufacturing cost, and profit for a 25,000 ton per year sodium chlorate plant at Calvert.

Fixed Investment	$6,320,000
Working Capital	935,000
Total	$7,255,000

Assuming the net selling price of $9.00 per cwt., as contained in Mr. Heitman's report, we estimate that the returns on investment are as follows:

Return on Fixed Investment	18.3%
Return on Total Monies	15.9%
Return on Sales	25.7%

If the selling price is $10.00 per cwt., the net profits are as follows:

Fixed Investment	25.4%
Total Investment	22.2%
On Sales	32.2%

We have also estimated the 10 year economic projection assuming that 50% of the total capital were borrowed at 6% interest. Assuming $9.00 per cwt. sales, the return before taxes on the equity capital is 23.6%; assuming $10.00 per cwt. for sales, return is 36%. On the 15 year projection, the return with sales at $9.00 per cwt. is 28.8% and with sales at $10.00 per cwt. is 44%.

asw:jh:fn

[fol. 1150] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 102

Pennsalt Chemicals

Will S12 write memo after talking with J. Logan? D11.

Subject: Chlorates—East
Date: December 5, 1957
To: File
From: W. Cooper Willits
Copies To: D11-S12-L14-L9

At a meeting in the President's office today, attended by those receiving copies of this memo, Mr. Shanaman advised of his recent discussions with John Logan of Olin-Mathieson regarding the above-mentioned subject. He also reported that he had successfully extended our existing agreement with Olin-Mathieson for five years in connection with the *exclusive use* of Olin-Mathieson's chlorate equipment in the pulp and paper industry.

In response to a direct question, Mr. Logan told Mr. Shanaman that Olin-Mathieson would be reluctant to enter into an agreement to sell approximately 2,000 tons of chlorates annually in the eastern market unless we were in the position to guarantee the supply of this amount of product for two or three years. Mr. Shanaman satisfied Mr. Logan that such supply would be available in that, should we decide to build a chlorate plant in the East, it would undoubtedly take two or three years before production from that facility would be available. Under these circumstances Mr. Logan indicated that Olin-Mathieson would be actively interested in distributing in the East 2,000 tons of our Portland chlorate production and that they would want to bill and negotiate sales agreements for this material.

Mr. Drake asked all present two questions:

(1) Do we agree that it is unlikely in view of the capital requirements and relatively low return on investment that we alone would approve construction of an eastern chlorate plant?

(2) Would Olin-Mathieson be a logical partner?

The answer to both questions was yes.

Mr. Shanaman stated that thus permitting Olin-Mathieson to sell this amount of chlorates would give them an opportunity to do introductory sales work and would in no sense restrict the sales of the proposed joint plant to them. [fol. 1151] It was agreed that as soon as possible Mr. Shanaman would negotiate with Mr. Logan the sale of chlorates as mentioned above and that a subsequent discussion would be arranged by Mr. Drake with officers of Olin-Mathieson in connection with the proposed joint chlorate plant.

W.C.W.

wcw/r

[fol. 1152] In United States District Court

Plaintiff's Exhibit 103

December 17, 1957.

Mr. John C. Logan, Vice President
Olin-Mathieson Chemical Corporation
Mathieson Building
Baltimore 3, Maryland

Dear John:

Following up our conversations at Philadelphia, I made arrangements for sales and technical representatives to meet with your associates at New Orleans. It is my understanding that such preliminary information as seemed to be pertinent was exchanged, and the feeling generally prevailed that something might be accomplished with respect to the wide sales distribution among the southeastern pulp and paper mills of some 2,000 tons of our Portland, Oregon sodium chlorate during the year 1958.

I understand that confirmation of our portion of the New Orleans meeting will be forwarded to Derek Richardson. I am sure that if your sales or technical personnel require anything further from us, requests will be promptly made, and I assure you that our answers will be returned with equal promptness.

We realize that in conducting our investigation during the next year or so, a considerable amount of freight equali-

zation will be involved as well as a substantial amount of time, effort and expense related to sales and technical effort. However, the long range interest which appears to have community implications would seem to warrant such expense at this time, and I trust these convictions are shared by you also.

I shall look forward to a meeting with you in late January or early February while in the East, at which time we can review not only some of the details which may require attention, but also what plans, if any, can be developed relating to when we jointly or singly can be operating a facility from which sodium chlorate can be shipped economically to those eastern and southern pulp mills which are generating chlorine dioxide for bleaching purposes.

Very best wishes for the forthcoming Holiday Season, and with kindest regards.

Sincerely, Pennsalt of Washington Division, Fred Shanaman, President

FCS:meh
cc: D11

[fol. 1153] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 104

cc S12, M34, S21, M32

Plaintiff's L. M. Shanaman Exhibit 1

December 17, 1957.

Olin Mathieson Chemical Corporation
Baltimore 3, Md.
Attention: Mr. Derek Richardson

Dear Derek:

It was indeed a pleasure for Brian Shera and the writer to meet with you and the members of your southern sales organization in New Orleans last week.

The important points discussed at the meeting, which we now confirm, are as follows:

1. We can make available to your southern sales organization, in 1958, 2000 tons of bulk sodium chlorate, for shipment in tank cars provided by Pennsalt, or in buyer's tank cars.

2. The sales price to the southern mills will of course be determined by the prices established by local competition. Currently these prices are reported to be $8.15/cwt. in seller's cars, and $8.09/cwt. in buyer's cars, with which freight will be equalized. Such carload freight equalization will be with Columbus, Mississippi; Niagara Falls, N.Y.; and Henderson, Nevada.

3. Shipments are to be as evenly as possible distributed over the year of 1958, and Pennsalt of Washington cannot obligate itself to ship more than four cars in any one month; although in special cases it may be found possible to do so.

4. It was agreed that you will endeavor to place our sodium chlorate to pulp mill consumers in the South on a broad basis, instead of to one or two large accounts.

5. It was also agreed that Mathieson's and Pennsalt of Washington's traffic managers will consult with each other concerning the possibility of establishing distribution centers with intransit rates. Your facilities at Lake Charles, Louisiana and McIntosh, Alabama were mentioned in relation thereto.

[fol. 1154] 6. It was agreed that should any technical service regarding the use of sodium chlorate be required, Pennsalt of Washington will provide same upon request, and sales assistance will be available in any of the mills where we are acquainted with the personnel, such as East Texas Pulp.

7. As we pointed out, our Philadelphia sales office has one account in the South: the Buckeye Cellulose mill at Foley, Florida. It is contemplated, for the purpose of our discussion, that this will be the only account in the South using sodium chlorate for chlorine dioxide generation that our company will be serving direct.

It is believed the above points cover all pertinent matters discussed at the meeting except, of course, the technical problems discussed and information given by Brian Shera.

Your Mr. J. L. Pickens inquired regarding the possibility of selling sodium chlorate to the uranium industry in the Intermountain area and I confirm that our conversation was related to the sale of sodium chlorate in bulk loaded into tank cars and for sale to pulp and paper mills in the Southeast.

If there is additional information which was not brought out at the meeting and which you require, please let us know immediately so same can be forwarded to you at once.

The writer expects to be in Portland within the next couple of weeks and will call your brother, Stanton, at that time.

Kindest personal regards.

Very truly yours, Pennsalt of Washington Division,
L. M. Shanaman, Sales Manager, Heavy Chemicals Division.

LMS:JS

[fol. 1155] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 105

Olin Mathieson Chemical Corporation

Industrial Chemicals Division

Mathieson Building Baltimore 3, Maryland

December 19, 1957.

Mr. F. C. Shanaman, President
Pennsalt of Washington Division
Pennsalt Chemicals Corporation
2901 Taylor Way
Tacoma 2, Washington

Dear Fred:

We want to acknowledge your letter of December 17th and confirm our wire of this date.

Since the meeting in New Orleans, our people have cov-

ered all of the paper mills consuming chlorate. They have discovered competitive contracts concluded or in the final stages of negotiation in all cases. The largest chlorate buyer, namely, International Paper, is completely contracted and reluctant to guarantee any spot purchases during 1958.

Apparently we got started a little late in order to reach the 2000 ton level next year but I am confident that our people will keep on top of the situation and pick up business as the year progresses. At the moment, we can see approximately 500 tons of business in sight.

I am looking forward to a thorough review of the short and long range relationship on chlorate when you are East the latter part of next month.

With sincere best wishes for the holidays, I am,

Very truly yours, J. O. Logan, Vice President—General Manager, Industrial Chemicals Division

JOL:rsm

[fol. 1156] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 107

Pennsalt Chemicals

Subject: Chlorates Opportunities East of the Rocky Mountains
Date: January 7, 1958
To: Mr. H. C. Land
From: G. R. Lawson
Copies To: G11 B24 D72 L8

The subject report is being sent to the Market Development files inasmuch as there is no allocation of funds for the project in 1958.

From our preliminary and cursory review of the study, I can report that there are many doubts in our minds as to the advisability of the Industrial Division producing and selling these products. Items of concern are high cost of the original investment, comparatively low return on that investment, possible high cost of selling and servicing the

products, and the competitive and resale situations which exist.

Market Development can keep the project alive in a minor way during the year if you believe it advisable to do so. This would mean the allocation of a comparatively small amount of the time of a man or two to investigate some of the doubtful areas mentioned above.

Please advise your wishes in this matter.

GRLawson:eey

[fol. 1157] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 109

January 14, 1958.

Mr. F. C. Shanaman, President
Pennsalt of Washington Division
Pennsalt Chemicals Corporation
2901 Taylor Way
Tacoma 1, Washington

Dear Fred:

Since undertaking our work on chlorate sales, our people have raised the question of chlorate usage by the railroads as a right of way weed killing agent.

We do have some opportunity to move chlorate for weed killing applications but are not sure this was included in the intent of our arrangement with you. Please let us have your thinking on this subject, and if you are agreeable that we should undertake some activity in this direction, we will probably wish to talk further with Roy or Brian Shera.

Although this matter has already arisen, it is not urgent that it be answered until our meeting later this month. However, if you wish to drop us a reply Air Mail, we can guide our people in the meantime.

Sincerely yours, J. O. Logan, Vice President—General Manager, Industrial Chemicals Division.

JOL:rsm
Via Air Mail
bcc: Mr. W. A. King

[fol. 1158] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 110

Pennsalt Chemicals Corporation
2901 Taylor Way, Tacoma 2, Washington

Pennsalt of Washington Division.
January 16, 1958.

Penn Salt Chlorate

Mr. J. O. Logan, Vice President
Industrial Chemicals Division
Olin Mathieson Chemical Corporation
Mathieson Building
Baltimore 3, Maryland

Dear John:

I am hurriedly acknowledging your letter of January 14 concerning sodium chlorate. We have a contract with Chipman Chemical Company which covers *are* sales of sodium chlorate for railroad weed killing purposes. Under the circumstances same had been excluded from earlier discussions, and I will elaborate thereupon when I see you later this month.

Sincerely, Pennsalt of Washington Division, Fred Shanaman, President.

FCS:meh

[fol. 1159] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 111

Olin Mathieson Chemical Corporation

Date: 2/4/58.

To: File
From: J. O. Logan at Baltimore
Subject: Sodium Chlorate

Visited yesterday with Messrs. Drake, Shanaman and Land in Philadelphia. Drake outlined their long-range interest in chlorate in the South and suggested that there was sufficient that both Pennsalt and OM had to contribute to seriously consider joint activity.

It was further stated that Pensalt will within the next one to two weeks make an announcement of going into the perchlorate business at their Portland plant. Shanaman stated that the production of perchlorate added significantly to the attractiveness of a chlorate venture both because of the improved return per unit of product and the increased rate of chlorate production required to produce perchlorate.

It is felt that neither OM nor Pennsalt should move in the chlorate or perchlorate field without keeping the other party informed and I agreed to do so. Further stated that OM had studied electrolytic and chemical production of chlorate and the latter was reasonably attractive if surplus chlorine and alkali capacity existed. Also stated that because of our HEF operation there were some thoughts of entering the perchlorate picture.

It was concluded that we would continue the present sales activity on our part throughout the South and would make no positive commitments to future production at this time. Either party is to bring to the attention of the other any unusual aspects of this business which might make it desirable to proceed further with production plans.

J. O. Logan.

Yellow copy in "Pennsalt" file.

[fol. 1160] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 116

Olin Mathieson Chemical Corporation

Industrial Chemicals Division
Mathieson Building
Baltimore 3, Maryland

Bulletin No. 1583

Date: February 24, 1958.

Subject: Sodium Chlorate

Arrangements have been made for Olin Mathieson to serve as sales agents for Pennsalt Chemicals Corporation, and effective at once the Industrial Chemicals Division will solicit Sodium Chlorate business from pulp and paper mills in the Southeastern and Gulf states on the following terms and conditions:

1. Price

In Seller's tank cars (90,000 lbs. minimum) $8.15 per 100 pounds
In Buyer's tank cars (90,000 lbs. minimum) $8.09 per 100 pounds
Above prices F.O.B. Portland, Oregon, freight equalized with existing freight rate from Columbus, Mississippi.

2. Shipments

Shipments will be made in 8,000 and 10,000 gallon tank cars, equipped particularly for handling Chlorates. All freight charges will be prepaid and customers will be invoiced for the freight charges from Columbus, Mississippi to destinations.

3. Terms of Payment

Net cash in thirty (30) days from date of invoice.

4. Producers

Pennsalt of Washington Division, Pennsalt Chemicals Corp., Portland, Oregon

Hooker Electrochemical Company, Oldbury Division, Columbus, Mississippi
American Potash and Chemical Corporation, Henderson, Nevada

5. Literature

Attached for use by our Sales offices only is a Technical Bulletin containing complete information pertaining to properties and safe handling of Sodium Chlorate. As soon as possible a new OMCC technical bulletin will be prepared and sent to all Sales offices for general customer distribution.

K. C. Frazier, Manager, General Products Sales.

[fol. 1761] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 122

Subject: Ammonium Perchlorate and Development Chemicals
Date: April 22, 1958
To: File
From: Edwin E. Tuttle
Copies: D11-L9-L14-S12

These receiving a copy of this letter met this morning on this subject.

In regard to ammonium perchlorate and other Pennsalt high-energy endeavors, the following was agreed upon:

1. The primary objective for going into perchlorates at this time is to facilitate the justification for chlorate manufacture in the South.
Secondary objectives are obtaining profit from perchlorate per se, and prestige advantages of being in the "missile" field.
2. Ammonium perchlorate is now in the *commercial* stage (as opposed to being in the technical development stage) with the plant at Portland to be in commercial operation by November 1.

This program is under the direction of Errol Karr, who is responsible for contacts with the Government to obtain contracts; answering inquiries on our perchlorate program; disseminating information on prices, etc. Naturally, however, Technical Division and other personnel can be of help in this program by passing along to Mr. Karr any information or contacts which they have.

3. Other Pennsalt high energy programs are in the *development* stage, and are the responsibility of the Technical Division. Technical contacts here will be the prime responsibility of Dr. John Gall.

The marketing of Commercial Development products was also discussed.

1. The present policy on this was mentioned as requiring that all inquiries regarding products currently in the Commercial Development Department of the Technical Division be referred directly to the C. D. Department, and that contacts with customers principally to the C. D. people doing the development work.
2. It was suggested that this program might be modified to obtain aid in this development work from the regular sales force of the Company.
3. Dr. LaLande and Mr. Shanaman agreed to resolve the policy on this.

E. E. T.

EET:K

[fol. 1162] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 123

Plaintiff's L. M. Shanaman Exhibit 6

Olin Mathieson Chemical Corporation

Industrial Chemicals Division

Mathieson Building Baltimore 3, Maryland

May 22, 1958.

Mr. L. M. Shanaman, Sales Manager
Heavy Chemicals Division
Pennsalt Chemicals Corporation
2901 Taylor Way
Tacoma, 2, Washington

Dear Roy:

Question has arisen recently as to whether we would be in position to supply any Sodium Chlorate in 100 pound drums in the State of Oklahoma. The use is in the manufacture of Chlorine Dioxide Hydrate. Volume is not much over 100 tons per year, but it is possible that through some of our connections we might be able to participate.

If you have no objections to our soliciting this business, would you please supply us with the price information and how we would fare in handling this business.

We still are looking forward to seeing you the next time you are in the east, and hope that you will let us know when that will be.

Very truly yours, Bill, O. J. Theobald, Jr., Assistant Manager—Field Sales.

OJT:ddm

$9.25, frt equalizer.

[fol. 1163] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 124

Pennsalt Chemicals

Subject: Sodium Chlorate—Sales Forecast 1959-1964
Date: May 28, 1958
To: Mr. H. C. Land
From: G. R. Lawson
Copies To: B24 D72 G11
Copies made for D11-L9-S12 7/22

Based on the information contained in the CDD Market Study on Chlorates Opportunities East of the Rocky Mountains and on our general knowledge of the situation, we believe the following tentative sales forecast is reasonable:

	Sodium Chlorate—Tons					
	1959	1960	1961	1962	1963	1964
Chipman	0	5,000	5,000	5,000	5,000	5,000
Pulp and Paper	2,500	5,000	7,500	10,000	15,000	15,000
Totals	2,500	10,000	12,500	15,000	20,000	20,000

This forecast is based on these assumptions—

1. That, a plant located in the Southeast will be in production by January 1, 1960.
2. That, 2,500 tons will be available to us from Tacoma for sale in 1959 so that an active Sales and Technical Service program can begin early next year (this includes the 1,000 tons of business we have currently).
3. That, adequate Technical Service support will be provided; this will require at least two qualified field men and one laboratory chemist at an estimated annual expense of $35-45,000. This technical service is essential to the success of this venture.
4. That, the right to offer and install the Mathieson chlorine dioxide process will remain available to us.
5. That, our present field Sales force and Central Office staff, except for technical service mentioned above, are adequate to secure this business.
6. That, the Chipman tonnage is "solid."

[fol. 1164] If this tentative forecast is attractive to Management, we would like to secure more factual support for it by actually contacting the known customers and prospects for Sodium Chlorate in the Pulp and Paper Industry. We do not feel that it would be wise to do this until the Company is seriously interested in going ahead with the plant based on economics and factors other than the sales picture.

Hand delivered by L45.

GRLawson:eey

P.S.: We feel keenly that our chances to meet this sales goal diminish with each month's delay and consequently, we now look with more favor on the joint venture with Olin-Mathieson in order to minimize our capital investment and the other risks involved.

[fol. 1165] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 125

June 2, 1958.

Pennsalt Chemicals Corporation
2901 Taylor Way, Tacoma 2, Washington
Pennsalt of Washington Division

May 28, 1958.

Pending

CW Frost is handling with Geo A. and will keep us advised.

Mr. O. J. Theobald
Assistant Manager Field Sales
Industrial Chemicals Division
Olin Mathieson Chemical Corporation
Baltimore 3, Maryland

Dear Bill:

Referring to your letter of May 22, this is to advise we could supply you with approximately 100 tons of sodium chlorate packaged in 100 pound drums for shipment to your customer in the state of Oklahoma. It is our understanding

that the use of the material would be for the manufacture of chlorine dioxide hydrate, which is evidently for use in the flour business.

The present eastern price on carloads of sodium chlorate packaged in 100 pound drums is 9¼¢ per pound f.o.b. Columbus, Mississippi or Niagara Falls and of course we would equalize freight with these points of manufacture. We would also allow you the usual commission of 5% which we are giving you on the bulk shipments to pulp mills.

Kindest personal regards and looking forward to discussing this further when I see you in the east during the week of June 15.

Very truly yours, Pennsalt of Washington Division, L. M. Shanaman, Sales Manager, Heavy Chemicals Division

LMS:JS
6/2 cc C. W. Frost

[fol. 1166] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 131

Chlorate

August 5, 1958
Mr. Hugh Land
F. C. Shanaman
L45 has original letter

You received a copy of letter written to Dr. LaLande July 1st by Harry Haines of Walter Kidde Engineers, S.W. Are you having your sales force contact these mills to be brought up to date concerning their use of chlorate? Are you having market research check them or are you in touch with Mathieson regarding their contacts with the mills in efforts to sell our chlorate? Furthermore, is there anything you are expecting us to do from out here in connection with these southern mills in the way of sending them chlorate handling bulletins, etc.?

——, ——.

[fol. 1167] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 132

Walter Kidde Engineers-Southwest
Incorporated
1205 Holman Avenue
Houston 4, Texas

JAckson 9-2644 P. O. Box 8347

July 1, 1958.

Copies sent 7-3-58
to: K5, L14, S12
Dr. W. A. LaLande, Jr.
Vice President
Pennsalt Chemicals Corporation
3 Penn Center Plaza
Philadelphia 2, Pa.

Dear Dr. LaLande:

During our conversation on perchlorates several months ago, we did not emphasize sodium chlorate, principally because I felt that Pennsalt was aware of any information we might contribute on this subject.

It occurred to me, however, that you might be interested in the market potential for sodium chlorate in the Southwest. Recently we surveyed some firms in this area to determine who were currently using sodium chlorate. The following companies consume a minimum of 20 tons per day:

Arkansas

Crossett Paper Mills	Crossett
International Paper	Pine Bluff

Louisiana

Gulf States Paper	Demopolis
International Paper	Spring Hill
International Paper	Bastrop

Texas

Champion Paper & Fibre	Pasadena
Chipman Chemical	Houston
East Texas Pulp & Paper	Evadale

[fol. 1168] We did not inquire whether or not the Murphy Corporation at El Dorado, Arkansas is a large consumer for the recovery of bromine from oil field brines.

It would appear, if cheap power is available, that the Southwest could support a sodium chlorate plant, if one-half of the output could be earmarked for captive perchlorate production.

I also understand that the Texas Power & Light Company will sell electricity for 4.5 mills if they can work up a demand for a new 100,000 KW station, either as a separate or joint venture among several chemical firms. This company anticipates they can protect themselves from natural gas price increases with their captive lignite deposits amounting to one-third of a billion tons.

If your market research department has any further questions, we will be happy to give them assistance in any studies they may decide to undertake.

Yours very truly, Walter Kidde Engineers-Southwest, Inc., Harry Haines, Petrochemical Contract Engineer.

HH/vf

[fol. 1169] In United States District Court

Plaintiff's Exhibit 133

Chlorate

September 8, 1958
Mr. F. C. Shanaman
H. C. Land
yours of August 5th

Answer to your above letter has been delayed due to my being away on vacation.

I am under the impression that you are working with Olin Mathieson in connection with the sale of chlorate in the east

and have allocated some material for them. Consequently, we have not been attempting to sell chlorate other than through old customers and have not contacted other paper mills concerning their potential use of chlorate. This would seem to us to only interfere with your arrangement with Olin Mathieson. If this is not in accordance with your understanding, please let me know.

HCL:mk

[fol. 1170] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 135

Pennsalt Chemicals
Established 1850

Subject: Chlorate
Date: September 10, 1958
To: Mr. H. C. Land
From: F. C. Shanaman
Re: Your memo 9/8/58

You will recall that the writer indicated at two or more meetings we had at Philadelphia that we would reserve 2,000 tons of sodium chlorate per annum for use in the East by Olin-Mathieson and Pennsalt to determine what type of reception you could get from the consuming trade, and which would give an indication as to the desirability of manufacturing chlorate in the East independently or jointly with Mathieson or someone else.

The questions I thought you would want to consider are as follows:

1. During this period of investigation are you, through your sales personnel, getting information on your own with regard to consumption, usage, etc., or are you relying on us to supply the information if there is some future interest in building a plant for selling in the East?
2. Is Market Research working under Mr. LaLande doing anything, or are you and LaLande relying on Mathieson to the extent that you believe Mathieson

and Pennsalt may be together in the future on a joint venture?

3. Is there anything which you are expecting us to do with regard to investigating the eastern market in the case of pulp or otherwise?

The point is, Hughie, that I do not wish to be asleep out here if we are supposed to be taking an active part in the development of information which you may subsequently want to review when you may be faced with making a decision.

F. C. S.

FCS:meh

[fol. 1171] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 136

Extract from—Management Committee Meeting No. 88
Date—September 11, 1958
Convened: 9:30 A.M. to 4:00 P.M.
Members Present—Messrs. Clark, Collins, Drake, LaLande, Land, McWhirter and Willits
Members Absent—Messrs. Clem and Shanaman

IV. October 13 Planning Meetings

Week of Oct. 13 meetings, All Div. Mgrs.

The following items were discussed and were put on the agenda for the October 13 meetings:

2. Each Division will prepare a firm 1959 capital budget for the October 13 meetings. Mr. Drake mentioned the following three items upon which firm decisions should be made at that time:

a) Whether we will build a Sodium Chlorate plant, and if so, where.

[fol. 1172] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 137

Chlorate

September 17, 1958
Mr. F. C. Shanaman
H. C. Land
yours of September 10th.

I remember very well the meetings we had in Philadelphia and the fact that you were to reserve chlorate for use in the East by Olin Mathieson and Pennsalt. I don't remember being advised of any of the details after your discussions with John Logan and Don Drummond, other than that you were supplying Olin Mathieson with chlorate. It seems logical for you to continue this discussion with them, since you are already working closely on chlorine dioxide.

We have reviewed the market study prepared under the direction of Technical Division by Arthur D. Little, and, as you know, over the last five years have several times investigated the possibility of producing chlorate ourselves and jointly with Olin Mathieson.

In answer to the questions raised in your letter, I can give you the following:

1. We are not attempting to obtain additional information on chlorate through our own Sales Department and are limiting ourselves to Buckeye Cellulose in the pulp and paper field. This is in accord with the 1,000 ton limitation which you had previously given us and which was confirmed just recently by Roy Shanaman when during August we had an inquiry from Union Bag.
2. The market information we have was prepared by Arthur D. Little and we are doing nothing further with it. It would seem that further discussions with Olin Mathieson would be necessary, and we were of the opinion that you were carrying on these discussions.
3. The contact and development of the project with Olin Mathieson is the only phase that we have been

counting on Western Division to handle. We have determined the amount of material that we believe can be sold in the East, based upon our previous experience and the Arthur D. Little report.

[fol. 1173] We should discuss this more fully when you are in the East for the meetings next month.

HCL:mk

[fol. 1174] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 139

Pennsalt Chemicals

Meeting Monday, Oct. 27.

Subject: Chlorates
Date: September 26, 1958
To: Messrs. H. C. Land and F. C. Shanaman
From: William P. Drake
Copies To: C20: C28: C92: L9: M44: T30: W1

With the completion of the first ammonium perchlorate unit at Portland, the time has come to evaluate the following:

1. Where are we today
2. Where do we go from here
3. When

Will each of you be prepared to finalize a program and submit your joint recommendations at the Management meeting the week of October 13.

W. P. D.

WPD:m

Mary—

Get Lawson sales forecast letter on chlorate and my letter to & from S12

[fol. 1175] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 141

Extract from—Management Committee Meeting No. 89

Date—October 13, 1958
—October 14, 1958
—October 15, 1958
—October 16, 1958

Members Present

Messrs. Clem, Collins, Drake, LaLande, Land, McWhirter, Shanaman and Willits for all meetings; Mr. Clark was present October 13, 15 and 16.

Convened: 9:10 A.M. to 5:30 P.M. (and dinner)
9:05 A.M. to 5:00 P.M.
9:00 A.M. to 5:45 P.M. (and dinner)
9:10 A.M. to 3:00 P.M.

IV. Proposed 1959 Capital Program (2:30)

C. Major Project Discussions

Perchlorate S-12-L9

3. Ammonium Perchlorate ($400,000; 39% return: Approved. An economic "incremental" expansion to 2,000 tons. It includes grinding facilities since Mr. Shanaman stated the only reason for customers currently doing their own, was dissatisfaction with other manufacturers' performance (L9 question). Mr. Shanaman agreed to check on the depreciation period used to calculate the return.

Southern Chlorate Plant S12-L9-L14

4. Southern Chlorate Plant: Not discussed (or included in the program) at this time. Messrs. Shanaman, Land and LaLande are to review October 27.

[fol. 1176] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 142

Pennsalt Chemicals

Subject: Chlorates
Date: October 17, 1958
To: Messrs. H. C. Land and F. C. Shanaman
From: William P. Drake
Copies To: L9

In further reference to my note of September 26, as you know we have scheduled a meeting for October 27th at 10:00 a.m. to try to conclude what, if anything, we shall do on chlorates in the Southeast. I believe you, Fred, are planning to have Errol Karr here; you, Hugh, will have present anyone you may wish who can contribute to this discussion and I am asking Al LaLande to have anyone he believes can contribute attend with him. In the meantime, however, I would still like to have you two, Messrs. Shanaman and Land, get your heads together prior to our meeting in order that we may have some recommendation from you on which to act. So, I hope you will find time to get together to develop for me your answers and recommendations on the three questions raised in my memo of September 26th.

W. P. D.

WPD:m

[fol. 1177] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 143

Subject: Chlorates Opportunities East of the Rocky Mountains
Date: October 29, 1958
To: Mr. R. W. Sloan
From: R. J. Eastman
Copies: D-11, K-5, L-9, L-14, L-45, S-12, W-17

Those persons receiving copies of this memorandum met on Monday, October 27, 1958, to discuss the subject proposal. The following information was developed after extended discussion.

1. The next meeting will be held on *Tuesday, November 4, 1958,* at *9:30 A.M. in the Board Room.*

2. Available for consideration during the November 4 meeting will be up-dated cost estimates for a Calvert City, Ky. plant producing for sale 20,000 TPY of sodium chlorate and 10,000 TPY of ammonium perchlorate.

a) Proposed timing for the venture (attached) was discussed among those directly concerned.

b) The following prices will be used in the study:

sodium chlorate—8.09¢/lb. in buyers' tank cars f.o.b. Calvert City, freight equalized against Columbus, Miss.

ammonium perchlorate—33¢/lb. in carloads f.o.b. Calvert City, freight equalized (1/3 against Henderson, Nevada, and 1/3 against Columbus, Miss.)

c) Any subsequent studies should include an investigation of alternate plant sites within the TVA power area.

d) Further engineering evaluation is needed on new type cells—larger cells, bipolar cells, etc.

3. *Industrial Division will be responsible for the sale of sodium chlorate from the new plant.*

2) The sales forecasts contained in L-45's letter to L-14 (May 28, 1958) are tentative pending three man-months of detailed field investigations. This work will not be under-

taken unless P.C.C. finds the economies of the project acceptable.

b) *If the project is accepted, Olin-Mathieson may be used* as a sales agent covering the pulp and paper industry, par-
[fol. 1178] ticularly in the early years.

c) Sales expense allowance in previous studies may be too high. A value of about 4 percent of gross sales may be more realistic.

d) The *long-term price trend in sodium chlorate is probably up.*

e) Although the U. S. Coast Guard now prohibits the movement of sodium chlorate by water, approval is expected on a plan to move sodium chlorate slurries (water) via barge on the West Coast.

f) *Am. Pot. may shift away from its Solvay sales agent arrangement.*

4. The Portland, Ore., ammonium perchlorate plant should be expanded immediately in accordance with the timing listed in the attached sheet.

a) Total cost including working capital is estimated at $545,000 for the 2,000 TPY plant.

5. Ammonium perchlorate demands from rocket needs are growing rapidly. Based upon current trends, shortages will exist before 1960.

6. The following items were not covered during the October 27 meeting:

a) The position of potassium chlorate in the proposed venture.

b) The sales responsibility on ammonium perchlorate produced in the East.

c) The probable effect of 2,000 TPY ammonium perchlorate capacity at Portland on the proposed eastern plant.

RJE/AKK

[fol. 1179] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 146

Subject: Chlorates Opportunities East of the Rocky Mountains
Date: November 11, 1958
To: Mr. R. W. Sloan
From: R. J. Eastman
Copies: D-11, K-5, L-9, L-14, L-45, S-12, W-17

Those persons receiving copies of this memorandum held a second meeting to discuss the subject proposal on Monday, November 3, 1958. The following information was developed.

A. Combined Chlorate—Perchlorate Venture at Calvert City

1. Based upon the most recent cost estimates (W-19 to L-9 on October 31, 1958) the combined venture looks *economically* attractive. This is a 30,000 TPY sodium chlorate plant and a 10,000 TPY ammonium perchlorate plant.

2. The 10% annual depreciation rate on chlorate facilities may be high. Perhaps 7% annually is more appropriate.

3. The 12% S & A is believed realistic considering the strong technical service-sales service efforts anticipated (Adm. 5% and Sales 7%).

4. The attractive return on the combined venture is the result of very high return on perchlorate.

5. From a *market* and *profitability* viewpoint, the combined venture is characterized as a "gamble".

6. The cost to completely engineer the chlorate-perchlorate plant for Calvert City is very roughly estimated to be about equal to the one-year profit from the 2,000 TPY Portland ammonium perchlorate operation, i.e., approximately $200,000. Plant start up can be expected fourteen months after authorization—assuming no interruptions.

7. Timing and coordination on this venture are critical if we are to meet the objectives (see schedule attached to meeting notes of October 27, 1958).

8. A major inconsistency in timing needs to be resolved—see page of Summary Section of this report.

[fol. 1180] B. Sodium Chlorate—30,000 TPY Production: 20,000 TPY Merchants Sales.

1. Cost estimates are considered "snug" (± 25%).

2. The future market outlook is good. Historically, the U. S. producers have made little effort to expand existing uses or to develop new uses. Experienced personnel believe that such efforts should be very rewarding.

3. Informed personnel believe the P.C.C.'s technology for sodium chlorate is equal to any producers and probably better than most. Cell efficiencies are believed slightly better than most of the installed capacity. Process room operations (where profits are made or lost) are judged to be "top quality."

4. As the newest producer, Pennsalt should and could take leadership in (1) promoting sales aggressively, (2) extending existing uses, (3) developing new uses, (4) improving use technology. Technical service and application research personnel and facilities will be needed. Assembly of these assets should start immediately by the Industrial Division.

5. Sodium chlorate bulk prices should remain firm through the near-term future and then increase. However, if P.C.C. overly publicizes a large (20,000 TPY plant, the competition, particularly American Potash, may react and cut prices.

6. Sodium chlorate package prices will in the near future increase ¼ cent per pound ($5.00 per ton) to cover packaging costs. A change in bulk prices would probably not extend directly to packaged goods. A new differential would probably be established.

7. A second follow-up announcement on this proposed Calvert City plant should be issued promptly to preempt the market from other interested companies—Solvay, Columbia-Southern, Olin-Mathieson, etc. Wording of the publicity should be carefully chosen to avoid upsetting current pricing—particularly in perchlorates.

8. Industrial Division needs time to develop a sales position in the Southern pulp and paper industry. Efforts

would be made to sell not only sodium chlorate but also ammonia, chlorine, caustic soda, etc. Efforts should begin immediately with 1960 contracts the goal (contracts signed in the fall of 1959).

9. About 10% of P.C.C.'s current sales are into pulp and paper and with the proposed expansion of chlorates this [fol. 1181] would be about 15% in 1963. Firm estimates will be prepared for Mr. Drake by S-12 and L-14.

C. Ammonium Perchlorate—10,000 TPY at Calvert, 2,000 TPY at Portland.

1. Cost estimates are probably optimistic.

2. Problems may be encountered in extrapolating the engineering data from "semi-continuous" type operation of the 2,000 TPY plant up to the "continuous" type operations sought for the 10,000 TPY plant.

3. Military demands for ammonium perchlorate appeared, upon review, to be more than adequate to absorb all projected production during the next five years.

4. American Potash has a preferred sales position in ammonium perchlorate. Ex-military personnel working for American Potash have established strong political positions with the military services.

5. P.C.C. should not be discouraged by large capacity owned by the Navy because of basic Navy policy of mothballing its production facilities to encourage civilian producers of critical items.

In summary the following action and timing were agreed upon:

1. Western Division will immediately initiate preparation of an Appropriation Request for a 2,000 TPY capacity ammonium perchlorate plant at Portland, Oregon. This Request is to be submitted to the Board in December, 1958.

2. Mr. Drake will apprise the Board of the proposed plans for production and marketing of sodium chlorate and ammonium perchlorate in the East. Specifically, the proposed plant at Calvert City is to have a capacity of 30,000 TPY sodium chlorate and 10,000 TPY ammonium perchlo-

rate. Industrial Division will market 20,000 TPY sodium chlorate and the balance of 10,000 TPY will be used captively for perchlorates production.

3. Following (2) above Mr. Drake will make final decision to authorize action and expenditures for:

a) Central Engineering Department immediately to design and engineer *for* an Appropriation Request the 30,000 TPY sodium chlorate plant and subsequently the 10,000 TPY perchlorate plant. The latter engineering can begin after Western Division provides data from its 500 TPY stage operations of [fol. 1182] the Portland plant. The 500 TPY plant will not be as continuous as the 2,000 TPY operation. The latter operation will not be completely continuous. To meet construction and operation schedule of first quarter 1960 for the Eastern plant, the Appropriation Request must be completed by late May, 1959.

b) Industrial Division immediately to plan, organize, and undertake entry in the Southern and other Eastern pulp and paper markets. The objective will be the commercial sale of product beginning in January, 1960.

c) Western Division immediately to plan, organize, and undertake more extensive sales and promotional coverage of the ammonium perchlorate purchasers. Special attention will be given to Washington representation.

d) Public Relations immediately to prepare releases to publicize both the Portland and the Calvert City expansions—both as follow-ups of previous announcements.

* * * * * * *

Note: There is a serious inconsistency in timing of the foregoing and following (below) actions. All meeting participants agreed that the first quarter 1960 is to be the goal for initial operation of the sodium chlorate plant. Mr. Woodard estimated an elapsed time of fourteen months

continuous effort to engineer, design and construct such a plant. However, the June, 1959 review date, indicated in 4. below, will defer plant start up until at least the middle of 1960.

4. Mr. Drake in June, 1959 will review the total project. If the venture's prospects and profitability are still favorable, he will shortly thereafter submit the Appropriation Request to the Board.

RJE/AKK

[fol. 1183] Proposed Timing of Chlorates Venture
Calverty City, Kentucky

Year	Sodium Chlorate	Ammonium Perchlorate	Portland, Ore. Ammonium Perchlorate
1958	Start engineering design for complete project. Start sales program on sodium chlorate		Start expansion from present 76 TPY capacity.
1959	Construct entire basic plant plus first third of sodium chlorate cell capacity. Year end capacity: 10,000 TPY Sales: P & P 2500 T (Material supplied by P.W: Div.)	Midyear start construction of 10,000 TPY plant with 2nd 10,000 TPY sodium chlorate support capacity (cells, etc.)	Midyear capacity: 500 TPY Yearend capacity: 2000 TPY Sales: 1000 T (estimate)
1960	Capacity: 10,000 TPY Sales: P & P 5,000 Agr.* 5,000 10,000 T Start construction 3rd 10,000 TPY cell capacity	Complete construction of 10,000 TPY plant. Year end capacity: 10,000 TPY	Capacity 2000 TPY Sales 2000 T
1961	Complete construction 3rd 10,000 TPY cell capacity Year end capacity: 20,000 TPY Production: 10,000 T (min) Sales: P & P 7,500 Agr.* 5,000 12,500 Apparent shortage: 2,500 T	Capacity: 10,000 TPY Production: 10,000 T Sales: 10,000 T	Same as 1960
1962	Capacity: 20,000 TPY Sales: P & P 10,000 T Agr.* 5,000 15,000 T Apparent excess: 5,000 T	Same as 1961	Same as 1960
1963	Capacity: 20,000 TPY Sales: P & P 15,000 T Agr.* 5,000 20,000 T	Same as 1961	Same as 1960

* Includes both sales to Chipman and conversion to potassium chlorate.

[fol. 1184] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 148

Extract from—Management Committee Meeting No. 90
Date—November 13, 1958

Convened: 10:45 to 4:45 P.M.

Members Present—Messrs: Clark, Clem, Drake, Land, LaLande, McWhirter and Willits

IV. Safety

H. Capital Projects

Ammonium Perchlorate Plant Action Required S12

2. *Ammonium Perchlorate Plant:* Mr. Drake stated Mr. Shanaman plans to have this submitted in time for the December 3 Board meeting.

Southern Chlorate Plant and Renegotiation Action Required W1

3. *Southern Chlorate Plant:* Still under study. A progress report indicated action may depend on how much we are willing to gamble on future markets. If we go ahead, we must be ready to sell chlorates by 1960.

For the perchlorate part of the project, Mr. Drake asked Mr. Willits to determine whether the perchlorate business would be subject to renegotiation.

[fol. 1185] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 151

Defendants reserve objection re admissibility.

Extract from—Management Committee Meeting No. 93
Date—January 9, 1959
Convened—9:30 to 5:00 P.M.
Members Present—Messrs. Clark, Clem, Collins, Drake, Land, LaLande, McWhirter, Shanaman and Willits

I. 1959 Budget

1. The final summary of the proposed 1959 Budget was presented. The total called for sales of about $83,000,000, earnings of $3.70 per share, and an approximate return on investment of 6.8%.

I. 1959 Budget

5. The capital budget, as reviewed and approved at the Barclay meetings, was reapproved for 1959. The only major addition was the West Coast Chlorate plant.

[fol. 1186] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 154

Plaintiff's LaLande Exhibit #11

2/20 Check with L9 on Olin-Mathieson data.

Subject: Appropriations Committee Meeting No. 15
Date: January 29, 1959
To: Messrs. Drake—LaLande—McWhirter and Willits
From: E. E. Tuttle
Copies: L14-S12

This meeting was held following the Management Committee meeting on Friday, January 23. All those receiving a copy of this letter were present.

The purpose of the meeting was to further discuss the Joint Chlorate and Perchlorate Expansion Project.

A. Joint Chlorate & Perchlorate Expansion (PSW-086-P)

1. The justification of this project versus that of a Perchlorate expansion alone was discussed on the basis of the data recorded in my letter of January 20.
2. As prepared, this project provides for a Chlorate capacity of 15,300 tons, which it is estimated will become inadequate for market requirements by 1963 (exclusive of Eastern requirements). After that time, the market is estimated to increase to 18,000 tons.

   In addition, Mr. Drake advised that conversations had again been made with Olin-Mathieson on the subject of a joint venture at Brunswick. A preliminary step to such a plant in the Southeast might be a market build-up supplied by production from the West Coast plant.

   In view of the above two considerations, Mr. Drake asked whether it would be advisable to increase the Chlorate capacity immediately to 18,000-19,000 tons.
3. Mr. Shanaman advised that the rectifiers, as included in the present request, were already sufficient to provide for a later expansion of another 4,000

tons (i.e., up to a capacity of 19,300 tons). The additional equipment necessary to raise the capacity to [fol. 1187] 19,300 tons would cost another $1.5 million. With the rectification as now included in PSW-086-P being sufficient for later expansion needs, Mr. Shanaman suggested that the full increase to 19,300 tons not be made immediately.

B. Action Taken:

The following action was decided upon:

1. PSW-086-P be taken to the Board on February 4 as written (i.e., $1,437,000. for fixed capital to expand Chlorate facilities by 3,000 tons to 15,300 tons, and to expand Ammonium Perchlorate capacity to 2,000 tons, but including standby rectifier capacity sufficient for 19,300 tons of Chlorates.
2. Mr. Shanaman would investigate further the capital costs and economics of an enlarged Chlorate plant of 18,000-19,000 ton capacity.
3. Dr. LaLande agreed to prepare data for discussion with Olin-Mathieson re the economics of a joint venture in the East for a Chlorate-Perchlorate project. If Olin is not desirous of proceeding further with this joint venture, Dr LaLande agreed to resubmit to the committee data on Pennsalt doing the project alone.

E. E. T.

EET:EF

Checked with L9 2/3—this will take at least 2 wks.

Checking with L9 (2/20) for

[fol. 1188] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 160

Olin Mathieson Chemical Corporation
Mathieson Building
Baltimore 3, Maryland

John O. Logan
Vice President

February 27, 1959.

Mr. W. P. Drake, President
Pennsalt Chemicals Corporation.
3 Penn Center Plaza
Philadelphia 2, Pennsylvania

Dear Bill:

We have brought up-to-date our information on power available at Brunswick, Georgia as you and I discussed in New York last month.

At the time of our previous study of this matter there was a limitation on the amount available but this has been eliminated by additional capacity both in power production and distribution facilities.

We may, therefore, consider that ample power will be available at Brunswick. It will cost approximately 7.5 mils per kwh delivered at a 11,000 kilowatt demand, which I believe is roughly equivalent to a 40 ton chlorate plant. This power can be delivered at any one of three voltages, namely, 4160, 12,600 or 13,800.

The more we look at Brunswick and the above power costs the more we recognize that it will be difficult to develop sound economics for chlorate production at that point. We are reviewing power and salt cost factors at other locations so as to be better prepared to reach a decision when such is necessary.

Kind personal regards.

Very truly yours, John.

cc sent to L14 & S12.
3/4/59 to nis.
JOL:rsm

[fol. 1189] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 165

Pennsalt Chemicals

Note on duplicate (HCL) says file until D-11 calls a meeting.

Subject: Sodium Chlorate and Ammonium Perchlorate Plants
Date: April 10, 1959
To: Mr. William P. Drake
From: W. A. LaLande, Jr.
Copies To: L14-M44-S12-W1-T30-7

In accordance with your request (Appropriation Request Committee Meeting No. 15 held January 23, 1959) I have summarized in the attached table investment and return data on chlorate and chlorate-perchlorate plants at Calvert City (1-8, incl.) and at Brunswick, Georgia (9-11, incl.).

Also attached are copies of letters from Central Engineering (W17-L9, 10/31/58;* T29-W17, 1/20/59; W17-L9, 4/6/59) giving the details of the estimating, all of which is based on the earlier calculations of Joe Heitman with necessary modifications.

It is our understanding that the Brunswick site has recently been eliminated from further consideration. Do you wish us to make any additional estimates?

Mathieson believes Brunswick costs too high evaluating Alabama site and will advise.

WAL:K
Att.

* You received a copy of this letter at the time it was issued; we are not, therefore, attaching a second copy.

[fol. 1190]

Return on Total Investment

	Plant Capacity, t/yr.		Financing	(12-yr. avg.)	Depreciation Period	Total P.C.C. Investment
*	1. Chlorate	30,000	100% P.C.C.	13.3%	12 years	$ 8,229,000.
	2. Chlorate	30,000	100% P.C.C.	28.2	12 years on chlorate	$11,768,000.
	Perchlorate	10,000			5 years on perchlorate	
	3. Chlorate	30,000	50% F.C. @ 6%	17.1	12 years	$ 4,559,000.
	4. Chlorate	30,000	50% F.C. @ 6%	40.0	12 years on chlorate	$ 6,905,000.
	Perchlorate	10,000			5 years on perchlorate	
	5. Chlorate	25,000	100% P.C.C.	15.9	27 years on bldgs. and heavy electrical; 17 years—equipment	$ 6,961,000.
	6. Chlorate	25,000	100% P.C.C.	24.1	As in (5)	$ 9,131,000.
	Perchlorate	5,000			5 years on perchlorate	
	7. Chlorate	25,000	50% F.C. @ 6%	27.1	As in (5)	$ 3,869,000.
	8. Chlorate	25,000	50% F.C. @ 6%	42.7	As in (5)	$ 5,241,000.
	Perchlorate	5,000			5 years on perchlorate	
**	9. Chlorate	25,000	100% P.C.C.	15.0	As in (5)	$10,930,000.
	Perchlorate	5,000				
***	10. Chlorate	25,000	50% F.C. @ 6%	22.6	As in (5)	$ 6,141,000.
	Perchlorate	5,000				
	11. Chlorate	25,000	100% F.C. @ 6%	83.2	13 years	$ 1,352,000.
	Perchlorate	5,000	(e.g., leaseback)			(working capital only)

* (1) to (8) at Calvert City
** (9) to (11) at Brunswick, Georgia
*** This estimate is not included in the attached reports.

April 10, 1959

WAL:K

[fol. 1191] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 166

Sodium Chlorate and Ammonium Perchlorate Plants
April 20, 1959
Dr. W. A. LaLande, Jr.
William P. Drake
L14: M44: S12: W1: T30

You are correct that the Brunswick site has recently been eliminated from further consideration. For the present I see no reason for you to do any additional work on this pending receipt of word from Mathieson relative to a site they are evaluating in Alabama which they believe will be superior to Brunswick.

Thanks for your report on this.

WPD:m

[fol. 1192] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 168

Extract from the Minutes of Division Management Meeting
Held on June 8, 1959

Present: J. O. Logan, O. J. Theobald, Jr., W. A. King, C. C. Hightower, K. C. Frazier, C. L. Williamson

Chlorate Facility

Subject facility will be discussed this week. It may be either on a joint venture or independent basis. The feeling exists that there is a market to justify such a facility. Mr. Logan will discuss our interest in the joint venture (Penn Salt) this week.

[fol. 1193] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 172

Chlorates

November 17, 1959 (Dict. 11.16.59)
Messrs. H. C. Land and W. A. LaLande, Jr.
William P. Drake

Tomorrow, or as soon as possible thereafter, I would like to talk with you again about chlorates in the East. While with Fred Shanaman this past week he told me that Olin Mathieson have asked for 3,000 tons of sodium chlorate for shipment to the Southeast in 1960. Apparently they are becoming more successful than anticipated in securing this business for the pulp and paper industry.

Will you please dust off your files and plan to discuss this with me on Thursday, November 19 at 2:30 P. M.

WPD:m

[fol. 1194] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 173

Pennsalt Chemicals

Subject: Chlorates—Eastern Plant
Date: December 14, 1959
To: Mr. W. P. Drake
From: N. M. Walker
Copies To. 1X

This letter is in answer to your request for a resume of the present situation regarding chlorates in the East.

In order to get background on this subject I have reviewed all the information in your files, as well as those of Messrs. Land, Lawson and Eastman, and in addition have talked to all of them. As I am sure you know, a mass of information has been collected on this subject and several meetings held —the last one on November 11, 1958. Since then the only

additional thing of importance which has happened is that Dr. LaLande sent you on April 10, 1959, a summary of investment and return data on chlorate and perchlorate plants at Calvert City and Brunswick, Georgia. These estimates are still valid.

The files indicate that as of November 1958 everything had been done preliminary to making a decision on this project, with the possible exception of reaching some agreement with Olin Mathieson on a joint venture. Now, however, I believe the sales forecast is out of date and to some extent will have to be redone. This is because at the time, timing was considered critical. Even when the sales forecast was made in May 1958, the Industrial Division was afraid American Potash and Hooker would be so far ahead that it would be difficult for Pennsalt to get a sales position. Now, over a year and a half later these two companies must be strongly entrenched and it will be necessary to determine just what the market potential is today and the current position of the two competitors.

In addition to bringing the market study and sales forecast for sodium chlorate up to date, the ammonium chlorate situation must also be reviewed. This is important because it is only the combined chlorate-perchlorate plants which make the project attractive from a return standpoint, particularly if Pennsalt were to undertake the project without a partner.

The latest thinking on plant size is 30,000 TPY for chlorate and 10,000 TPY for perchlorate. Without a partner and using 100% Pennsalt capital the combined plant shows a return of 28%. Sodium chlorate alone shows a return of 13%. With a partner and 50% borrowed capital at 6% the return for a combined plant is 40% and for chlorate alone 17%.

[fol. 1195] One thing that appears to have prevented this project from moving along is the fact that no one appears to have been given overall responsibility for it. I believe that so much time has passed since this project was last considered that another meeting will be necessary to move it off "dead center."

N. M. W.

NMW/eh

[fol. 1196] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 174

Pennsalt Chemicals

Subject: Chlorate
Date: December 30, 1959
To: Mr. W. P. Drake
From: H. C. Land

On November 17th you wrote about a meeting on Chlorates in the East. I don't believe that this meeting was ever held. I must admit that I was of the opinion that this project was not active, since it was not mentioned during our recent Pocono Manor meetings and is not among the approved projects for the period 1960-1964. However, if it is to be reactivated we should all be advised of current thinking.

During Mr. Shanaman's recent trip east he told me that he can sell all of the chlorate on the west coast and has no interest in sending the product east unless we have active plans to install production facilities. In fact, he will have to purchase European chlorate for us to supply P&G at Foley, Florida, and this will not be profitable business on that basis. I am about ready to tell P&G that we do not wish to supply them after the 1960 contract is fulfilled. We are also not able to handle inquir-es for chlorate properly since our Sales people do not know whether they should solicit business for future divisional sale, turn the inquiry over to Olin Mathieson, or refer the inquiry to the west coast. While we are not actively attempting to sell chlorate in the east, our contacts with paper mills turn up inquiries from time to time such as the present one we have with Waldorf Paper Products in Wisconsin.

I have read the recent file and make the following observations:

1. Chlorate in the east is a good project only if perchlorate is included and then only if production is at least 25,000 tons per year chlorate and 5,000 tons per year perchlorate.
2. Chlorate alone would have to include a partner who is willing to supply 50% of the capital at 6%, and the

plant should have a minimum production capacity of 25,000 tons per year.

3. Plant must be at Calvert or as a part of an existing chemical plant located on the TVA power system.

[fol. 1197] 4. We must have the right to use Olin Mathieson's chlorine dioxide process.

5. Unless Olin Mathieson is going to sell the output of the proposed plant, there seems to be no reason to be giving them 3,000 tons per year of chlorate from Portland.

When this project was undertaken back in 1957, we talked about either building a plant or putting the project to bed so that we would not periodically review the much traveled ground without coming to a conclusion. I believe the objective stated is still a good one.

H. C. Land.

HCL:mk

[fol. 1198] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 175

Plaintiff's Clem Exhibit 1 for Identification

9-28-61 LD.

Willits

[Letterhead of]

Olin Mathieson Chemical Corporation

February 11, 1960.

Mr. William P. Drake, President
Pennsalt Chemicals Corporation
3 Penn Center
Philadelphia 2, Pennsylvania

Dear Mr. Drake:

This letter is intended to outline a basis on which Pennsalt Chemicals Corporation ("Pennsalt") and Olin Mathieson Chemical Corporation ("Olin") will enter into a joint venture for the manufacturing and marketing of Sodium Chlorate, Potassium Chlorate, and Perchlorates to be manufactured in facilities of a new company designated as Penn-Olin Chemical Company, hereinafter referred to as ("Penn-Olin") to be owned equally by Pennsalt and Olin.

Preliminary estimates indicate that the proposed 25,000 ton/year Sodium Chlorate plant and related facilities will cost approximately $6,500,000.

Final engineering studies are now being made to determine the cost of the Sodium Chlorate project. In this connection, there is to be a joint technical investigation to evaluate available equipment and processes for this facility and based on the findings of this investigation, the equipment and process to be employed will be mutually agreed upon. Each of the parties agrees to retain in confidence secret know-how which it receives from the other in the course of this negotiation and will enter into appropriate "confidentiality" agreements with respect thereto. Outside engineering expenses incurred by mutual agreement will be shared equally by Pennsalt and Olin. While these studies are in

progress, financial arrangements will be made and contracts drawn to carry out these projects in accordance with the general principles set forth herein.

1. Pennsalt and Olin will each own 50% of the capital stock of Penn-Olin and 50% of the subordinated notes, if any, of Penn-Olin. It is agreed that the financing of Penn-Olin shall, to the extent possible, be accomplished by a maximum amount of debt financing, to be provided by a bank or other lending institution, and a minimum amount of capital stock and subordinated notes. It is presently expected that [fol. 1199] the amount to be invested by Pennsalt and Olin in respect of the capital stock and subordinated notes of Penn-Olin will not exceed the sum of $1,000,000 for each party.

2. Penn-Olin will endeavor to negotiate a bank loan on terms satisfactory to Pennsalt and Olin estimated between four and one-half and five million dollars to be used toward the financing of the construction of the new Sodium Chlorate plant and related facilities.

3. Penn-Olin will arrange for the construction and operation of the Sodium Chlorate plant, such operations to be governed by the following understanding:

(a) Pennsalt will transfer to Penn-Olin land for the plant location adjacent to Pennsalt's Calvert City, Kentucky plant; the value of said land to be based upon a current appraisal and to be credited against the subscription payable by Pennsalt for the capital stock of Penn-Olin.

(b) All services supplied by Pennsalt or Olin to Penn-Olin will be provided at Pennsalt's or Olin's actual cost of such services, excluding, however, corporate general administrative expense.

4. Penn-Olin will arrange for the sale of its output of Sodium Chlorate by Olin and Olin shall act as sales agent of Sodium Chlorate for Penn-Olin, and Olin shall use its best efforts to sell the Sodium Chlorate at the best terms available, such marketing to be governed by the following understanding:

(a) All Sodium Chlorate sold to Olin, Pennsalt, their affiliates or subsidiaries for consumption purposes shall be

sold at competitive market price and no allowance shall be made to Olin for selling expense.

(b) The Sodium Chlorate sold to others than Olin, Pennsalt, their affiliates or subsidiaries shall be the responsibility of Olin.

(c) Olin as sales agent for Penn-Olin shall be reimbursed for all direct and indirect expenses incurred in making such sales including a pro rata share of Divisional administrative expenses, but excluding corporate general administrative expense.

5. With respect to any technical information, know-how, process techniques and apparatus, and operating data relating to the operations or contemplated operations of Penn-Olin which either party now possess or which it may develop prior to December 31, 1964 (hereinafter called Technical Information), each of the parties hereto agrees:

[fol. 1200] (a) to disclose its Technical Information promptly to Penn-Olin,

(b) to grant to Penn-Olin a nonexclusive, royalty free right to use said Technical Information in its own operations, and

(c) to grant to Penn-Olin a nonexclusive, royalty free license under its U. S. Patents required in the use of the said Technical Information by Penn-Olin.

6. It is recognized that a definitive contract in greater detail will be necessary to cover the provisions of this letter respecting the selection of a Sodium Chlorate process, and the formation of Penn-Olin and other matters relating thereto. Both parties agree to negotiate in good faith for the purpose of reaching a mutual agreement on the provisions of a definitive contract that will be consistent with the understandings above set forth. If the definitive contract is not agreed upon and executed by both parties within a reasonable time after date of acceptance of this letter, both parties will be relieved of all further obligations under this letter, except with respect to the sharing of outside engineering expenses, theretofore, authorized by the parties.

If the foregoing meets with your approval, will you

please so indicate by signing and returning the attached copy of this letter.

Very truly yours, Olin Mathieson Chemical Corporation, By s/ S deJ. Osborne.

Approved as of the date of this letter:

Pennsalt Chemicals Corporation, By s/ Wm. P. Drake.

[fol. 1201] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 176

Certificate of Incorporation of Penn-Olin Chemical Company

We, the undersigned, for the purpose of associating to establish a corporation for the transaction of the business and the promotion and conduct of the objects and purposes hereinafter stated, under the provisions and subject to the requirements of the laws of the State of Delaware (particularly Chapter 1 of Title 8 of the Delaware Code of 1953, and the acts amendatory thereof and supplemental thereto, and known as the "General Corporation Law of the State of Delaware"), do make and file this certificate of incorporation in writing and do hereby certify as follows, to wit:

First: The name of the corporation (hereinafter called the Corporation) is

Penn-Olin Chemical Company

Second: The respective names of the County and of the City within the County in which the principal office of the Corporation is to be located in the State of Delaware are the County of New Castle and the City of Wilmington. The name of the resident agent of the Corporation is The Corporation Trust Company. The street and number of said [fol. 1202] principal office and the address by street and number of said resident agent is No. 100 West Tenth Street, in the City of Wilmington, State of Delaware.

Third: The nature of the business of the Corporation and the objects or purposes to be transacted, promoted or carried on by it are as follows:

(1) To produce, manufacture, process, refine, treat, extract, store, purchase or otherwise acquire, and to sell, use, deal in, transport, distribute, market, handle and otherwise turn to account or dispose of, either in their natural form or any altered, converted or manufactured form, chemicals and chemical compositions of any state, form, nature, mixture or description, including, without limiting the generality of the foregoing, Sodium Chlorate, Potassium Chlorates, and perchlorates and any and all materials, mixtures, products, byproducts, articles and substances directly or indirectly related thereto in any way or of a like or similar nature, including all those which may be ingredients thereof or derivatives therefrom, or which may be useful in the manufacture or production thereof, or which may be advantageously manufactured or produced in connection therewith, or in the manufacture, production or use of which the same may be useful, and all other kinds of products, articles, goods, wares and merchandise, of every name and nature, whether consisting, in whole or in part, of materials and substances similar to or different from the foregoing.

(2) To erect, construct, build, purchase, lease or otherwise acquire, equip, hold, own, improve, develop, manage, maintain, control, operate, lease, mortgage, create liens upon, sell, convey or otherwise dispose of, or turn to account, any and all buildings, factories, plants, refineries, laboratories, oil wells, gas wells, mines, installations, equipment, machinery, storage tanks, tank cars, tank wagons, locomotives, railroad cars, tractors, trucks, cars, airplanes, boats, barges and other vehicles and vessels, pipe lines, pumps, pumping stations, filling stations, railways, roadways, canals, water courses, wharves, piers, docks, basins, and other structures, machines and apparatus of every kind and description, and any and all rights and privileges therein, useful in the conduct of the business of the Corporation.

[fol. 1203] (3) To conduct and carry on any experimental and research work in chemical, engineering and other scientific fields, and to render to any person, firm, association or corporation engaged in any lawful adventure, enterprise or business, services of an engineering, scientific, business or technical nature, or concerned with the management, production or sale of any patent, process, or business program.

(4) To manufacture, process, purchase, sell and generally to trade and deal in and with machinery, apparatus, goods, wares, products and merchandise of every kind, nature and description, and to engage and participate in any mercantile, industrial or trading business of any kind or character whatsoever.

(5) To acquire by lease, purchase, contract, concession or otherwise, and to own, explore, exploit, develop, improve, operate, lease, enjoy, control, manage or otherwise turn to account, mortgage, grant, sell, exchange, convey or otherwise dispose of, any and all real estate, lands, options, concessions, grants, land patents, mineral rights, and any other franchises, claims, rights, privileges, easements, tenements, estates, hereditaments, interests and properties, real or personal, tangible or intangible, of every description and nature whatsoever, useful in the conduct of the business of the Corporation.

(6) To purchase or otherwise acquire, and to hold, mortgage, pledge, sell, exchange or otherwise dispose of, securities (which term, for the purpose of this Article Third, includes, without limitation of the generality thereof, any shares of stock, bonds, debentures, notes, mortgages or other obligations, and any certificates, receipts or other instruments representing rights to receive, purchase or subscribe for the same, or representing any other rights or interests therein or in any property or assets) created or issued by any persons, firms, associations, corporation, or governments or subdivisions, instrumentalities or agencies thereof; to make payment therefor in any lawful manner; and to exercise, as owner or holder of any securities, any and all rights, powers and privileges in respect thereof.

(7) To enter into, make, perform and carry out

contracts and agreements of every kind and description which may be necessary, appropriate, convenient or advisable in carrying out the business of the Corporation, with any corporation, association, partnership, [fol. 1204] firm, trustee, syndicate, individual, government, state, municipality or other governmental division or subdivision.

(8) To acquire by purchase, exchange or otherwise, all, or any part of, or any interest in, the properties, assets, business and good will of any one or more persons, firms, associations or corporations heretofore or hereafter engaged in any business for which a corporation may now or hereafter be organized under the laws of the State of Delaware; to pay for the same in cash, property or its own or other securities; to hold, operate, reorganize, liquidate, sell, lease or in any manner dispose of the whole or any part thereof; and in connection therewith, to assume or guarantee performance of any liabilities, obligations or contracts of such persons, firms, associations or corporations, and to conduct the whole or any part of any business thus acquired.

(9) To lend its uninvested funds from time to time to such extent, to such persons, firms, associations, corporations, governments or subdivisions, instrumentalities or agencies thereof, and on such terms and on such security, if any, as the Board of Directors of the Corporation may determine.

(10) To endorse or guarantee the payment of principal, interest or dividends upon, and to guarantee the performance of sinking fund or other obligations of, any securities, and to guarantee the performance of any contracts or other undertakings in which the Corporation may otherwise be or become interested, in so far as may be permitted by law.

(11) To develop, apply for, obtain, register, purchase, lease, take licenses in respect of or otherwise acquire, and to hold, own, use, operate, enjoy, turn to account, grant licenses in respect of, manufacture under, introduce, sell, assign, mortgage, pledge or otherwise dispose of any and all inventions, devices, formulae, processes, improvements and modifications

thereof, letters patent and all rights connected therewith or appertaining thereunto, copyrights, trademarks, trade names, trade symbols and other indications of origin and ownership, franchises, licenses, grants and concessions granted by or recognized under the laws of the United States of America or of any State or subdivision thereof or of any other country or subdivision thereof.

[fol. 1205] (12) To borrow money for any of the purposes of the Corporation, from time to time, and without limit as to amount; from time to time to issue and sell its own securities in such amounts, on such terms and conditions, for such purposes and for such prices, now or hereafter permitted by the laws of the State of Delaware and by this certificate of incorporation, as the Board of Directors of the Corporation may determine; and to secure such securities by mortgage upon, or the pledge of, or the conveyance or assignment in trust of, the whole or any part of the properties, assets, business and good will of the Corporation, then owned or thereafter acquired.

(13) To purchase, hold, cancel, reissue, sell, exchange, transfer or otherwise deal in its own securities from time to time to such an extent and in such manner and upon such terms as the Board of Directors or the Corporation shall determine; provided that the Corporation shall not use its funds or property for the purchase of shares of its own capital stock when such use would cause any impairment of its capital, except to the extent permitted by law; and provided further that shares of its own capital stock belonging to the Corporation shall not be voted upon directly or indirectly.

(14) To organize or cause to be organized under the laws of the State of Delaware, or of any other State of the United States of America, or of the District of Columbia, or of any territory, dependency, colony or possession of the United States of America, or of any foreign country, a corporation or corporations for the purpose of transacting, promoting or carrying on any of or all the objects or purposes for which the Corporation is organized, and to dissolve, wind up, liqui-

date, merge or consolidate any such corporation or corporations or to cause the same to be dissolved, wound up, liquidated, merged or consolidated.

(15) To conduct its business in any and all of its branches and maintain offices both within and without the State of Delaware, in any and all States of the United States of America, in the District of Columbia, in any or all territories, dependencies, colonies or possessions of the United States of America, and in foreign countries.

(16) To do all and everything necessary, suitable, convenient or proper for, or in connection with, or incident to, the accomplishment of any of the purposes [fol. 1206] or the attainment of any one or more of the objects herein enumerated or incident to the powers herein specified, or which shall at any time appear conducive to or expedient for the accomplishment of any of the purposes or the attainment of any of the objects hereinbefore enumerated not inconsistent with the laws of the State of Delaware; and to execute from time to time such general or special powers of attorney, and to such person or persons as the Board of Directors may approve, granting to such person or persons such powers as the Board of Directors may deem proper, and to revoke such powers of attorney as and when the Board of Directors may desire.

The foregoing provisions of this Article Third shall be construed both as purposes and powers and each as an independent purpose and power. The foregoing enumeration of specific purposes and powers shall not be held to limit or restrict in any manner the purposes and powers of the Corporation, and the purposes and powers herein specified shall, except when otherwise provided in this Article Third, be in no wise limited or restricted by reference to, or inference from, the terms of any provision of this or any other Article of this certificate of incorporation; provided that nothing herein contained shall be construed as authorizing the Corporation to issue bills, notes or other evidences of debt for circulation as money, or to carry on the business of receiving deposits of money or the business of buying gold or silver bullion or foreign coins or as

authorizing the Corporation to engage in the business of banking or insurance or to carry on the business of constructing, maintaining or operating public utilities in the State of Delaware; and provided, further that the Corporation shall not carry on any business or exercise any power in any state, territory or country which under the laws [fol. 1207] thereof the Corporation may not lawfully carry on or exercise.

Fourth: The total number of shares of stock which the Corporation shall have authority to issue is Two thousand (2,000), and the par value of each of such shares shall be One Dollar ($1.00). All such shares shall be of one class and shall be designated Common Stock.

The minimum amount of capital with which the Corporation shall commence business is Two thousand Dollars ($2,000).

The holders of Common Stock shall, as such, have the right, pro rata, according to their respective holdings of Common Stock, and on such terms and conditions as the Board of Directors may determine, to purchase or subscribe for (a) any of the authorized but unissued shares of Common Stock which the Corporation may hereafter issue for cash or (b) any obligation which the Corporation may hereafter issue or sell for cash which shall be convertible into, or exchangeable for, shares of Common Stock or to which shall be attached or appurtenant any warrant, option or other instrument that shall confer upon the holder or holders of such obligation the right to subscribe for or purchase or receive from the Corporation any shares of Common Stock; provided, however, that any such right to purchase or subscribe for any such shares of Common Stock or any such obligation shall be nontransferable; and provided further, that if and to the extent said right is not [fol. 1208] exercised within a reasonable time, as determined and prescribed by the Board of Directors, or subject to the exercise of said right, such shares of Common Stock or such obligations may thereafter be issued and disposed of pursuant to resolutions of the Board of Directors, adopted either before or after any offering to holders of Common Stock as contemplated herein, to such persons, firms, corporations or other entities or groups and upon such terms and conditions as may be deemed advisable by

the Board of Directors in the exercise of its discretion. Except as herein above expressly provided or unless otherwise determined by the Board of Directors, no holder of stock of the Corporation of any class shall, as such holder, have any right to purchase or subscribe for (a) any shares of stock of any class which the Corporation may issue or sell, whether or not such stock shall be out of unissued shares authorized by this certificate of incorporation or by any amendment thereto or out of any shares of stock of the Corporation acquired by it after the issue thereof, or (b) any obligation which the Corporation may issue or sell that shall be convertible into, or exchangeable for, any shares of stock of the Corporation of any class or classes, or to which shall be attached or appurtenant any warrant, option or other instrument that shall confer upon the holder or holders of such obligation the right to subscribe for or purchase or receive from the Corporation any shares of its stock of any class or classes.

[fol. 1209] Subject to the By-laws of the Corporation, as from time to time amended, with respect to the closing of the transfer books and the fixing of a record date for the determination of stockholders entitled to vote, each holder of record of Common Stock shall be entitled to one vote for each share of Common Stock held by him at each meeting of the stockholders of the Corporation.

Fifth: The names and places of residence of each of the incorporators are as follows:

Name	
Reginald C. Burroughs	315 Paddington Road Baltimore 12, Maryland
Kenneth Bank	3302 Hillsdale Road Baltimore 7, Maryland
William A. Sutton	1210 Winston Avenue Baltimore 12, Maryland

Sixth: The Corporation is to have perpetual existence.

Seventh: The private property of the stockholders of the Corporation shall not be subject to the payment of corporate debts to any extent whatever.

Eighth: For the management of the business and for the conduct of the affairs of the Corporation, and in further definition, limitation and regulation of the powers of the Corporation and of its directors and stockholders, it is further provided:

[fol. 1210] 1. The number of directors of the Corporation shall be fixed by its by-laws and may be altered from time to time by amending the by-laws as therein provided, but in no case shall the number be less than three. A director need not be a stockholder. The election of directors of the Corporation need not be by ballot unless the by-laws so require.

2. In furtherance and not in limitation of the powers conferred by the laws of the State of Delaware, the Board of Directors is expressly authorized and empowered:

(a) To make, alter, amend or repeal the by-laws of the Corporation, in any manner not inconsistent with the laws of the State of Delaware or the Certificate of Incorporation of the Corporation;

(b) Subject to the applicable provisions of the by-laws then in effect, to determine from time to time, whether and to what extent and at what times and places and under what conditions and regulations the accounts and books and documents of the Corporation, or any of them, shall be open to the inspection of stockholders;

[fol. 1211] (c) Subject to the provisions of this Certificate of Incorporation, to authorize and issue, from time to time, obligations of the Corporation, secured or unsecured, to include therein provisions as to redeemability, convertibility into shares of stock of the Corporation or otherwise, and to authorize the mortgaging or pledging, as security therefor, of any property, real or personal, then owned or thereafter acquired by the Corporation;

(d) To determine whether any, and if any, what part, of the annual net profits of the Corporation or of its net assets in excess of its capital shall be declared in dividends and paid to the stockholders, and to direct and determine the use and disposition of any such annual net profits or net assets in excess of capital;

(e) To fix from time to time the amount of the profits of the Corporation to be reserved as working capital or for any other lawful purpose;

(f) To establish bonus, profit-sharing, retirement or other types of incentive or compensation plans for the

officers and employees (including officers and employees who are also directors) of the Corporation and to determine the persons to participate in any such plans and the amount of their respective participations;

[fol. 1212] (g) To issue and sell or grant options for the purchase of shares of stock of the Corporation or shares of stocks of any other corporation to officers and employees (including officers and employees who are also directors) of the Corporation and its subsidiaries for such consideration and on such terms and conditions as the Board of Directors may from time to time determine;

(h) To designate one or more committees, each committee to consist of two (2) or more of the directors of the Corporation, which to the extent provided in said resolution or resolutions or in the by-laws, shall have and may exercise the powers of the Board of Directors in the management of the business and affairs of the Corporation and may have power to authorize the seal of the Corporation to be affixed to all papers which may require it, such committee or committees to have such name or names as may be stated in the by-laws or as may be determined from time to time by resolution adopted by the Board of Directors;

(i) To cause the Corporation to enter into an agreement or agreements with one or more stockholders restricting or affecting the transferability of any shares of stock represented by certificates held by such stockholders and, provided the restriction is stated upon the certificate or certificates representing such shares, to restrict the transferability of any shares [fol. 1213] of stock so represented in accordance with such agreement or agreements; and

(j) In addition to the powers and authorities hereinbefore and by the laws of the State of Delaware expressly conferred upon the Board of Directors, to exercise all such powers and do all such acts and things as may be exercised or done by the Corporation, subject, nevertheless, to the provisions of the laws of the State of Delaware, of this Certificate of Incorporation and of the by-laws of the Corporation.

3. Any director or any officer elected or appointed by the stockholders of the Corporation or by its Board of Directors may be removed at any time in such manner as shall be provided in the by-laws of the Corporation.

4. In the absence of fraud, no contract or other transaction between the Corporation and any other corporation, and no act of the Corporation, shall in any way be invalidated or otherwise affected by the fact that any one or more of the directors of the Corporation are pecuniarily or otherwise interested in, or are directors or officers of, such other corporation or have a pecuniary or other interest in such act. Any director of the Corporation individually, or any firm or association of which any director may be a member, may be a party to, or may be pecuniarily or other- [fol. 1214] wise interested in, any contract or transaction of the Corporation, provided that the fact that he individually or such firm or association is such a party or so interested shall be disclosed or shall have been known to the Board of Directors of the Corporation or a majority of the members thereof as shall be present at any meeting of the Board of Directors at which action upon any such contract or transaction shall be taken; and any director of the Corporation who is also a director or officer of such other corporation or who is so interested, may be counted in determining the existence of a quorum at any meeting of the Board of Directors or of any committee thereof which shall authorize any such contract or transaction, and may vote thereat to authorize any such contract or transaction, with like force and effect as if he were not such director or officer of such other corporation or not so interested. Any director of the Corporation may vote upon any contract or other transaction between the Corporation and any subsidiary or affiliated corporation without regard to the fact that he is also a director of such subsidiary or affiliated corporation.

Any contract, transaction or act of the Corporation, or of the Board of Directors, or of any committee of the Board of Directors, which shall be ratified by the holders of a [fol. 1215] majority of the outstanding capital stock of the Corporation either in writing or by vote at any annual meeting, or at any special meeting called for such purpose, shall, in so far as permitted by law or by this Certificate

of Incorporation, be as valid and as binding as though ratified by every such stockholder; provided, however, that any failure of the stockholders to approve or ratify any such contract, transaction or act, when and if submitted, shall not be deemed in any way to invalidate the same or deprive the Corporation, its directors, officers or employees, of its or their right to proceed with such contract, transaction or act.

5. Subject to any limitation in the by-laws then in effect, the members of the Board of Directors shall be entitled to reasonable fees, salaries or other compensation for their services and to reimbursement for their expenses as such members. Nothing contained herein shall preclude any director from serving the Corporation, or any subsidiary or affiliated corporation, in any other capacity and receiving proper compensation therefor.

6. Anything herein contained to the contrary notwithstanding, (a) the number of directors who shall be present at any meeting of the directors in order to constitute a quorum for the transaction of any business shall be at [fol. 1216] least a majority of the whole Board of Directors, and (b) the number of votes of directors that shall be necessary for the transaction of any business at any meeting of directors shall be the affirmative votes of at least a majority of the whole Board of Directors. As used in this paragraph, the term "whole Board of Directors" shall mean the number of directors which the Corporation is at the time authorized to have, as specified in the By-laws of the Corporation.

7. The number of votes or consents of the holders of shares of stock of the Corporation of any class having voting power that shall be necessary for the approval or ratification of any proposal or action at any meeting of the stockholders, including amendments to this certificate of incorporation, or the giving of any consent, shall be the affirmative votes or consents of the holders of at least a majority of the shares of stock of the Corporation of such class at the time issued and outstanding.

Ninth: The stockholders and the Board of Directors shall have the power, if the by-laws so provide, to hold their respective meetings outside of the State of Delaware, and except as otherwise required by law, the corporate records,

books, documents and papers of the Corporation may be kept outside of the State of Delaware.

[fol. 1217] Tenth: The Corporation reserves the right from time to time to amend, alter, change, add to or repeal any provisions contained in this Certificate of Incorporation in any manner now or hereafter prescribed by law and in this Certificate of Incorporation, and all rights and powers at any time conferred upon stockholders, directors and officers of the Corporation by this Certificate of Incorporation or any amendment thereof are subject to the provisions of this Article Tenth.

In Witness Whereof, we, the undersigned, being all of the incorporators hereinabove named, do hereby further certify that the facts hereinabove stated are truly set forth, and accordingly have hereunto set our respective hands and seals this 24th day of February, 1960.

Reginald C. Burroughs, (Seal). Kenneth Bank, (Seal). William A. Sutton, (Seal).

[fol. 1218]. STATE OF MARYLAND,
City of Baltimore, ss:

Be it Remembered that on the 24th day of February, 1960, personally appeared before me, Helen M. Alban a Notary Public in and for the City and State aforesaid, Reginald C. Burroughs, Kenneth Bank and William A. Sutton, all the incorporators who signed the foregoing Certificate of Incorporation, known to me personally to be such, and I having made known to them and to each of them the contents of said Certificate of Incorporation, they did severally acknowledge the same to be the act and deed of the signers, respectively, and that the facts therein stated are truly set forth.

Given under my hand and seal of office the day and year aforesaid.

Helen M. Alban, Notary Public.

My Commission Expires May 1, 1961

Helen M. Alban, Notary Public, Baltimore, Md.

[fol. 1219]

State of Delaware

Office of Secretary of State.

I, George J. Schulz, Secretary of State of the State of Delaware, do hereby certify that the above and foregoing is a true and correct copy of

Certificate of Incorporation of the "PENN-OLIN CHEMICAL COMPANY", as received and filed in this office the twenty-fifth day of February, A.D. 1960, at 10 o'clock A.M.

In Testimony Whereof, I have hereunto set my hand and official seal at Dover this twenty-fifth day of February in the year of our Lord one thousand nine hundred and sixty.

Office of Secretary of State.

I, George J. Schulz, Secretary of State of the State of Delaware, do hereby certify that the above and foregoing is a true and correct copy of

Certificate of Incorporation of the "PENN-OLIN CHEMICAL COMPANY", as received and filed in this office the twenty-fifth day of February, A.D. 1960, at 10 o'clock A.M.

In Testimony Whereof, I have hereunto set my hand and official seal at Dover this twenty-fifth day of February in the year of our Lord one thousand nine hundred and sixty.

George J. Schulz
Secretary of State

FORM 121

REC'D FOR RECORD Feb.25,1960. JOSEPH A. BRADSHAW, RECORDER

253

[fol. 1220] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 181

This agreement is dated and is effective as of January 2, 1961.

The parties are Pennsalt Chemicals Corporation (Pennsalt), a Pennsylvania corporation, Olin Mathieson Chemical Corporation (Olin), a Virginia corporation, and Penn-Olin Chemical Company (Penn-Olin), a Delaware corporation.

The background of this Agreement is:

A. By letter agreement dated February 11, 1960, Pennsalt and Olin agreed to (i) enter into a joint venture for the manufacturing and marketing of sodium chlorate through Penn-Olin and (ii) set forth the terms of this joint venture in greater detail in a definitive contract. This is the definitive contract and supersedes the February 11, 1960 letter agreement.

B. Penn-Olin was incorporated with an authorized capital of 2,000 shares, each with a par value of $1, of which one share has been issued to Pennsalt for $1,000 and one share to Olin for a like amount.

C. Penn-Olin is about to acquire land from Pennsalt adjacent to Pennsalt's existing plant at Calvert City, Kentucky, and to construct on it a sodium chlorate plant (Plant) with an annual capacity of 26,500 tons.

The terms of this Agreement are:

1. *Financing.* The initial cash requirements of Penn-Olin are presently estimated at approximately $7,500,000 and will be provided by

[fol. 1221] (a) Pennsalt's and Olin's each buying 499 shares of Penn-Olin $1 par value capital stock (Stock) at a price of $1,000 per share payable in cash or property as later stated;

(b) Pennsalt's and Olin's each buying $1,000,000 principal amount of Subordinated Notes due 1970 (Subordinated Notes) of Penn-Olin, such Subordinated Notes to bear interest at the same annual rate as the

loan referred to in subparagraph 1(c) and to be in substantially the form of the attached Exhibit A; and

(c) Penn-Olin's borrowing up to $4,500,000 from one or more commercial banks or other lending institutions under one or more loan agreements containing terms satisfactory to Pennsalt and Olin. Purchases under subparagraphs 1(a) and 1(b) will be made in accordance with the schedule which has been approved by Pennsalt and Olin.

2. *Conveyance of Plant Site.*

(a) Promptly after the effective date of this Agreement Pennsalt will convey to Penn-Olin a parcel of land (Land), as shown on the attached Exhibit B, located at Calvert City, Kentucky, adjacent to Pennsalt's existing plant, with an area of 11.833 acres for a price of $4,000 per acre, or a total amount of $47,332. The Land and any Additional Acreage sold to Penn-Olin pursuant to subparagraphs 2(b) and 2(c) will be conveyed free and clear of all liens, charges and en- [fol. 1222] cumbrances, but subject to existing easements. Pennsalt warrants that none of such easements will impair Penn-Olin's use of the Land in operating its business or the value of the Land for the purpose of the business. By separate agreement (herein called the easement agreement) between Pennsalt and Penn-Olin, to be dated as of the date of the deed to Penn-Olin for the Land, Pennsalt will grant to Penn-Olin easements over other property of Pennsalt as therein described. Such separate agreement will also reserve to Pennsalt certain easements with respect to the Land. In payment for the Land Penn-Olin will issue to Pennsalt 47 shares of Stock (which shares are included in the 499 shares referred to in paragraph 1) at the rate of $1,000 per share and $332 in cash. Penn-Olin will complete construction of the Plant on the Land.

(b) For future expansion of Penn-Olin's operations, Pennsalt will keep available for Penn-Olin through December 31, 1970, a total of approximately 16.9 additional acres (Additional Acreage) as shown on the attached Exhibit B. At any time or from time to time through such date, if Penn-Olin notifies Pennsalt in writing that Penn-Olin desires to purchase all or any part of the Additional Acreage, Pennsalt will convey the same to Penn-Olin upon payment

in cash for it at Pennsalt's principal office not later than 30 days after delivery of Penn-Olin's notice. The purchase price for Additional Acreage will be an amount equal to its appraised value at the time of purchase by Penn-Olin, as determined by an appraiser mutually agreed upon by Pennsalt and Olin.

[fol. 1223] (c) After December 31, 1970, Pensalt will not sell or otherwise dispose of Additional Acreage not purchased by Penn-Olin except as follows: If Pennsalt desires to use for its own purposes or to dispose of Additional Acreage it will deliver to Penn-Olin a written notice (i) advising Penn-Olin of the amount of Additional Acreage to be used or disposed of, (ii) naming the price (which will be the appraised value of such amount within 30 days of the date of the notice and determined by an appraiser mutually agreed upon by Pennsalt and Olin) at which it is willing to sell such amount and (iii) giving Penn-Olin an option to buy all such amount at such price. If within 30 days after delivery of such notice Penn-Olin notifies Pennsalt in writing of its election to purchase all such amount, Pennsalt will convey the same to Penn-Olin upon payment in cash for it at Penn-Olin's principal office not later than 20 days after delivery of Penn-Olin's election. If Penn-Olin does not so elect to purchase such amount of Additional Acreage, Pennsalt may thereafter use all or part of the Additional Acreage referred to in such notice or dispose of all or part of such Additional Acreage for such price and on such terms as it deems desirable, free (whether used or disposed of) of any option or other obligation to Penn-Olin hereunder or otherwise.

[fol. 1224] 3. *Purchase of Stock and Subordinated Notes.*

(a) Pennsalt and Olin will each purchase Stock up to the amounts stated in subparagraph 1(a) as requested from time to time by Penn-Olin. Stock will be purchased in such amounts that Pennsalt and Olin will always each own an equal number of shares. At the time the Land is conveyed, Olin will buy sufficient Stock to give it the same number of shares as Pennsalt. No borrowing will be made under the loan agreement referred to above until all Stock to be purchased under subparagraph 1(a) has been purchased.

(b) Pennsalt and Olin will each purchase Subordinated Notes up to the amount stated in subparagraph 1 (b) as requested from time to time by Penn-Olin. Subordinated Notes will be purchased in such amounts that Pennsalt and Olin will each always own an equal principal amount thereof. It is understood that no call shall be made by Penn-Olin for Subordinated Notes until all of the aforesaid shares of Stock shall have been purchased by Pennsalt and Olin.

(c) Pennsalt and Olin each agree that all Stock and Subordinated Notes acquired as provided in subparagraphs 3(a) and 3(b) will be acquired for investment and not with a view to the distribution or resale thereof.

4. *Voting of Stock.* At all times Pennsalt and Olin will each be entitled at each stockholders' meeting of Penn-Olin for the election of directors to nominate and elect the number of directors (to the nearest whole number) which bears the same ratio to the total number of directors to be elected as the number of shares of Stock held by it and its wholly- [fol. 1225] owned subsidiaries bears to the total number of shares of Stock then outstanding. Either Pennsalt or Olin will be entitled to nominate and elect a majority of the number of directors of Penn-Olin at any time when either and its wholly-owned subsidiaries own a majority of the outstanding Stock. The person to fill any vacancy in the board of directors of Penn-Olin will be designated by the holder of Stock who was represented on the board by the predecessor of such person. The number of directors will not be increased except by election at a meeting of stockholders, provided that the foregoing shall not apply to the increase in number of directors effected at the meeting of directors held October 20, 1960. Pennsalt and Olin will each vote and will cause its wholly-owned subsidiaries to vote all shares of Stock owned by them to carry out the intent of this paragraph.

5. *Restrictions on Transfer of Stock.*

(a) Neither Pennsalt nor Olin nor any of their respective wholly-owned subsidiaries will pledge or otherwise dispose of any Stock except as later stated. No disposal of Stock will be valid and no transfer of Stock will be made

on the transfer records of Penn-Olin unless Penn-Olin receives evidence satisfactory to it that the conditions stated below have been met.

(b) Pennsalt and Olin will each have the right to transfer Stock to one or more of its wholly-owned subsidiaries or to a corporation succeeding it by merger, consolidation, or the purchase of substantially all of its assets, but only if the transferee agrees in writing with the other parties hereto to be bound by the provisions of this Agreement. [fol. 1226] Pennsalt or Olin, as the case may be, will acquire all Stock held by a wholly-owned subsidiary before disposing of any of its shares of such subsidiary.

(c) In the case of a transfer other than one permitted by subparagraph 5(b), the transferor will deliver to Pennsalt or Olin, as the case may be (the optionee), a written notice (i) stating the number of shares of Stock that the transferor desires to transfer, (ii) advising the optionee of the names of any prospective transferees to whom the transferor desires to dispose of the Stock, (iii) naming the price at which it is willing to sell the Stock, and (iv) giving the optionee an option to buy all such Stock at such price. The notice will provide that if the optionee elects to buy all the Stock specified in the notice from the transferor the optionee will so notify the transferor in writing within 30 days after delivery of the notice from the transferor. The transferor will assign and transfer such Stock to the optionee upon payment for it at Penn-Olin's principal office not later than 20 days after delivery of the notice from the optionee to the transferor.

If the optionee does not give such notice within such 30-day period, the transferor will be entitled for a period of three months beginning on the 31st day after delivery of its notice to the optionee to dispose of not less than all of the Stock specified in such notice to the prospective transferees named and at the price stated in the notice. Such transferees will be entitled to have such Stock transferred upon the transfer records of Penn-Olin and such Stock will thereafter be free of the restrictions above stated. If the transferor does not dispose of such Stock within the three-months' period, such Stock will thereafter be subject to all the restrictions above stated.

[fol. 1227] During the effective period of this Agreement

each Stock certificate will bear the following words when held by anyone subject to this Agreement:

> "Transfer of the shares of stock represented by this certificate is subject to an agreement dated as of 1961, by Pennsalt Chemicals Corporation, Olin Mathieson Chemical Corporation and Penn-Olin Chemical Company, a copy of which agreement is on file at the principal office of Penn-Olin Chemical Company."

6. *Parent Company Options to Prevent Penn-Olin's Default.* If at any time Penn-Olin shall not have sufficient cash to repay any installment of principal on its borrowings or other obligations, Pennsalt and Olin each shall have the option to loan to Penn-Olin a proportion of the cash required by Penn-Olin to repay any such installment corresponding to the percentage of outstanding Stock then owned by Pennsalt and Olin, as the case may be, and its wholly-owned subsidiaries. Such loans will be evidenced by the Subordinated Notes (Parent Company Subordinated Notes), of Penn-Olin in substantially the form of the attached Exhibit C, and will bear interest at the prime rate on the date of issue.

If either Pennsalt or Olin fails to exercise such option (the Defaulting Parent), then the other (the Lending Parent) shall have the option to make an additional loan to Penn-Olin covering the balance of the amount required by Penn-Olin to repay any such installment, such additional loan to be evidenced by Parent Company Subordinated Notes.

[fol. 1228] At any time within six months following the making of such additional loan, the Defaulting Parent shall have the option, upon written notice to the Lending Parent, to purchase from the Lending Parent the Parent Company Subordinated Notes issued to the Lending Parent in connection with the making of such additional loan. If such option is not exercised within such six months' period, the Defaulting Parent will, at any time thereafter, at the option and upon written notice by the Lending Parent, purchase from the Lending Parent the Parent Company Subordinated Notes issued to the Lending Parent in connection with the making of such additional loan. In either case,

such purchase shall take place at the Lending Parent's principal office on a full business day designated by the purchaser, not less than five and not more than ten full business days following the day on which notice relating to such purchase shall have been given. The purchase price of such Parent Company Subordinated Notes shall be par plus the amount of any unpaid interest accrued to date of purchase. Such purchase price shall be paid by the Defaulting Parent, against delivery by the Lending Parent of such Parent Company Subordinated Notes, duly endorsed to the order of the Defaulting Parent, but without recourse of any kind, and such payment shall be made, at the option of the Defaulting Parent, either (i) in cash or by certified or official bank check, or (ii) by the transfer to the Lending Parent of a number of full shares of Stock at the time owned by the Defaulting Parent or by its wholly-owned subsidiaries equal (as nearly as may be) in aggregate book value as of the date of purchase to such purchase price, any balance of such purchase price in excess of said aggregate book value to be paid in cash.

[fol. 1229] For the purposes of this paragraph 6, the book value of shares of Stock as of any date shall be the book value thereof determined from the balance sheet of Penn-Olin as of the end of the preceding calendar quarter, as certified by Penn-Olin's Treasurer. If either the Defaulting Parent or the Lending Parent requests such balance sheet to be certified by independent public accountants, Penn-Olin will arrange for such certification by the independent public accountants then employed by it, but all expenses incurred in connection therewith shall be paid by the parent company requesting such certification. If the balance sheet, as so certified, results in any change of book value in shares of Stock for the purposes of this paragraph 6, appropriate adjustment, by payment or refund, will be made between the Defaulting Parent and the Lending Parent to reflect such change.

7. *Technical Information.* Pennsalt and Olin agree that, with respect to any technical information, know-how, process techniques and apparatus, and operating data relating to the manufacturing and marketing of sodium chlorate which either Pennsalt or Olin possesses or which it may

develop prior to December 31, 1964 (Technical Information), Pennsalt and Olin will each:

(i) disclose its Technical Information promptly to Penn-Olin;

(ii) grant to Penn-Olin a nonexclusive, royalty free right to use said Technical Information in its own operations; and

(iii) grant to Penn-Olin a nonexclusive, royalty free license under its U. S. and Canadian Patents required in the use of said Technical Information by Penn-Olin.

[fol. 1230] Pennsalt and Olin shall establish as promptly as practicable a technical committee consisting of an equal number of representatives designated by each such party (at least 3 representatives to be designated by each). Pennsalt and Olin shall disclose said Technical Information and only said Technical Information to such committee which shall receive the same solely on behalf of Penn-Olin, and transmit the same to Penn-Olin solely for its own use.

8. *Officers.* It is agreed that (i) the office of President shall be alternated annually between designees of Pennsalt and designees of Olin, and (ii) when the office of President is held by a designee of one of such parties, the other of such parties may designate the person to hold the office of Vice President.

9. *Notices.* Any notice, request or other communication provided for in this Agreement will be in writing mailed or delivered to the party involved at the address stated below:

Pennsalt Chemicals Corporation
Three Penn Center
Philadelphia 2, Pennsylvania

Olin Mathieson Chemical Corporation
Chemicals Division
10 Light Street
Baltimore 3, Maryland
Attention of: Vice President and General Manager

Penn-Olin Chemical Company
100 West 10th Street
Wilmington 99, Delaware

or at such other address as such party may later designate by notice in accordance with this Agreement. Any such notice, request or other communication which is mailed by registered mail or certified mail will be deemed to have been given at the time of mailing.

[fol. 1231] 10. *Term.* This Agreement will continue until (a) the total number of shares of Stock owned by Pennsalt and Olin and the wholly-owned subsidiaries of either is less than a majority of the outstanding Stock or (b) all borrowings under the loan agreement mentioned in subparagraph 1(c) have been repaid and either Pennsalt and its wholly-owned subsidiaries or Olin and its wholly-owned subsidiaries no longer hold any Stock.

11. *Conditions.* The obligations of the parties, except for those stated in paragraph 5, are subject to execution of (a) a loan agreement pursuant to subparagraph 1(c), (b) an agreement between Penn-Olin and Pennsalt satisfactory to Olin with respect to the purchase from Pennsalt of Penn-Olin's requirements of certain services and utilities and the performance of certain administrative and other services on behalf of Penn-Olin, and (c) an agreement between Penn-Olin and Olin satisfactory to Pennsalt with respect to Olin's performance of sales services for Penn-Olin.

12. *Examination of Books.* Penn-Olin shall have the right, at all reasonable times, to examine the books of Olin to the extent reasonably necessary to determine the charges made under the above-mentioned sales agreement, and Penn-Olin shall have the right, at all reasonable times, to examine the books of Pennsalt to the extent reasonably necessary to determine the charges made under the above-mentioned service agreement. Any such examination shall be made through independent public accountants satisfactory to the parties.

[fol. 1232] 13. *Miscellaneous.*

(a) This Agreement will inure to to the benefit of and be binding upon (i) a wholly-owned subsidiary of Pennsalt or Olin to which any Stock is transferred and (ii) any corporation into or with which any party is merged or consolidated or to which it sells substantially all of its assets as permitted by the provisions of paragraph 5.

(b) The parties intend to be legally bound by this Agreement which will be governed by Pennsylvania law.

(c) All prior agreements between Pennsalt and Olin on any matter covered by this Agreement or the above-mentioned sales or service agreements or easement agreement, including those contained in the above-mentioned letter agreement dated February 11, 1960, are superseded hereby or by such sales or service agreements, or easement agreement, as the case may be.

(d) The operations of Penn-Olin shall be limited exclusively to the manufacturing and marketing of sodium chlorate and all other activities necessarily incident thereto.

In Witness Whereof, the parties hereto have caused these presents to be duly executed the day and year first above written.

Pennsalt Chemicals Corporation, By J. McWhirter, Vice President, Olin Mathieson Chemical Corporation, By J. O. Logan, Vice President, Penn-Olin Chemical Company, By J. McWhirter, President.

(Corporate Seal)

Attest: Nicholas M. Walker, Assistant Secretary.

(Corporate Seal)

Attest: C. L. Williamson, Asst. Secretary.

(Corporate Seal)

Attest: ——, ——, Secretary.

[fol. 1233] Exhibit A

Penn-Olin Chemical Company

Subordinated Note, due January 1, 1970

$1,000,000

, 19—.

Penn-Olin Chemical Company, a Delaware corporation (herein called the Company), for value received, hereby promises to pay to the order of —————— the principal amount of One Million Dollars ($1,000,000) on or before January 1, 1970, and to pay interest on the unpaid prin-

cipal amount hereof at the rate of 5% per annum from the date hereof, payable semiannually on January 1 and July 1 in each year. Payment of the principal of and interest on this note will be made at the principal office of the Company in Wilmington, Delaware, in such coin or currency of the United States of America as at the time of payment is legal tender for the payment of public and private debts.

This note is one of a duly authorized issue of notes of the Company (herein called the Notes), of like tenor and effect except as to date, payee and principal amount, limited to a maximum aggregate principal amount of $2,000,000 all issued or to be issued in accordance with the provisions of an Agreement dated as of January 2, 1961, among the Company, Pennsalt Chemicals Corporation (herein called Pennsalt) and Olin Mathieson Chemical Corporation (herein called Olin).

So long as ——— (herein called the Bank) shall have any commitment under the Loan Agreement dated ——— 1961, between the Company and the Bank (herein called the Loan Agreement) and until all of the notes (herein called [fol. 1234] the Bank Notes) issued pursuant to the Loan Agreement have been paid in full, the Company will not be obligated to make, and the holders of the Notes will not take or receive from the Company, in any manner, payment of the whole or any part of the Notes or security therefor; provided, however, that so long as no event of default defined in the Loan Agreement shall have occurred and be continuing, interest on the Notes may be paid and received in accordance with its terms. Upon any distribution of assets of the Company to creditors upon any dissolution or winding-up or total or partial liquidation or reorganization of the Company, whether voluntary or involuntary, or in any bankruptcy, insolvency, receivership or other proceedings, all principal, interest and premium, if any, due upon the Bank Notes shall first be paid in full before the holders of the Notes shall be entitled to receive or retain any payment or distribution in respect thereof. Upon any such dissolution or winding-up or liquidation or reorganization, the holder of this note irrevocably authorizes the holder of the Bank Notes to file on behalf of the holder of this note any and all claims, proofs of debt, petitions, consents and other documents, and any payment or distribu-

tion of assets of the Company of any kind or character, whether in cash, property or securities, to which the holder of this note would be entitled, shall be paid, by the Company or by any receiver, trustee in bankruptcy, liquidating trustee, agent or other person making such payment or distribution, direct to the holder of the Bank Notes to the extent necessary to pay all the Bank Notes in full before any payment or distribution is made to the holder of this note. Notwithstanding the foregoing provisions, if, upon any such dissolution or winding-up or liquidation or reorganization, any payment or distribution of assets of the [fol. 1235] Company of any kind or character, whether in cash, property or securities, shall be received by the holder of this note before all the Bank Notes are paid in full, such payment or distribution will be held in trust for the benefit of, and shall be paid over to, the holder of the Bank Notes for application to the payment of the Bank Notes until all the Bank Notes shall have been paid in full. No extension or renewal or alteration of the provisions of any of the Bank Notes or of the Loan Agreement shall in any way impair or affect the foregoing terms. The provisions of this paragraph are for the sole and exclusive benefit of the holder or holders of the Bank Notes and shall not affect the rights and obligations of the Company and the holder of this note as between themselves.

The Company covenants and agrees that, subject to the provisions of the preceding paragraph hereof, it will duly and punctually pay or cause to be paid the principal amount of and interest on this note as and when the same shall become due and payable and at the place and in the manner provided herein, and that all payments of the principal amount of and interest on the Notes and all prepayments, if any, shall be made *pro rata* as between the Notes originally issued to Pennsalt and the Notes originally issued to Olin, so that the amount paid at any time on account of the principal amount of or interest on the Notes originally issued to Pennsalt shall bear the same proportion to the amount paid at such time on account of the principal amount of or interest on the Notes originally issued to Olin as the then unpaid principal amount of all the Notes originally issued to Pennsalt bears to the then unpaid principal amount of all the Notes originally issued to Olin.

Subject to the foregoing provisions, this note is subject [fol. 1236] to prepayment in the manner aforesaid, at the election of the Company, in whole at any time or in part from time to time, at the principal amount thereof, without premium, and accrued and unpaid interest thereon to the date of such prepayment.

No failure or delay on the part of the holder of this note in exercising any right hereunder shall operate as a waiver thereof, nor shall any single or partial exercise of any such right hereunder prevent any other or further exercise thereof, or the exercise of any other right hereunder.

No recourse shall be had for the payment of the principal amount of or interest on this note, or for any claim based thereon, against any stockholder or officer or director, as such, of the Company.

In Witness Whereof, the Company has caused this note to be signed in its name by its President or one of its Vice Presidents and its corporate seal to be hereunto affixed and attested by its Secretary or one of its Assistant Secretaries, all as of the day and year first above written.

Penn-Olin Chemical Company, by ——, ——, President.

Attest:

——, ——, Secretary.

[fol. 1237] Exhibit B

(Plan to be supplied.)

[fol. 1238] Exhibit C

Penn-Olin Chemical Company

% Subordinated Note

$——

, 19—.

Penn-Olin Chemical Company, a Delaware corporation (herein called the Company), for value received, hereby promises to pay to the order of —————— the principal amount of —————— on demand, and to pay interest on the unpaid principal amount thereof at the rate of ——% per annum from the date hereof, payable semiannually on

——— and ——— in each year. Payment of the principal of and interest on this note will be made at the principal office of the Company in Wilmington, Delaware, in such coin or currency of the United States of America as at the time of payment is legal tender for the payment of public and private debts.

This note is one of a duly authorized issue of notes of the Company (herein called the Notes), of like tenor and effect except as to date, payee and principal amount, all issued or to be issued in accordance with the provisions of an Agreement dated as of ——— 1961, among the Company, Pennsalt Chemicals Corporation (herein called Pennsalt) and Olin Mathieson Chemical Corporation (herein called Olin).

So long as ——— (herein called the Bank) shall have any commitment under the Loan Agreement dated ———, 1961, between the Company and the Bank (herein called the Loan Agreement) and until all of the notes (herein called the Bank Notes) issued pursuant to the Loan [fol. 1239] Agreement have been paid in full, the Company will not be obligated to make, and the holders of the Notes will not take or receive from the Company, in any manner, payment of the whole or any part of the Notes or security therefor; provided, however, that, so long as no event of default defined in the Loan Agreement shall have occurred and be continuing, interest on the Notes may be paid and received in accordance with its terms. Upon any distribution of assets of the Company to creditors upon any dissolution or winding-up or total or partial liquidation or reorganization of the Company, whether voluntary or involuntary, or in any bankruptcy, insolvency, receivership or other proceedings, all principal, interest and premium, if any, due upon the Bank Notes shall first be paid in full before the holders of the Notes shall be entitled to receive or retain any payment or distribution in respect thereof. Upon any such dissolution or winding-up or liquidation or reorganization, the holder of this note irrevocably authorizes the holder of the Bank Notes to file on behalf of the holder of this note any and all claims, proofs of debt, petitions, consents and other documents, and any payment or distribution of assets of the Company of any kind or

character, whether in cash, property or securities, to which the holder of this note would be entitled, shall be paid, by the Company or by any receiver, trustee in bankruptcy, liquidating trustee, agent or other person making such payment or distribution, direct to the holder of the Bank Notes to the extent necessary to pay all the Bank Notes in full before any payment or distribution is made to the holder of this note. Notwithstanding the foregoing provisions, if, upon any such dissolution or winding-up or liquidation or reorganization, any payment or distribution of assets of the Company of any kind or character, whether in cash, [fol. 1240] property or securities, shall be received by the holder of this note before all the Bank Notes are paid in full, such payment or distribution will be held in trust for the benefit of, and shall be paid over to, the holder of the Bank Notes for application to the payment of the Bank Notes until all the Bank Notes shall have been paid in full. No extension or renewal or alteration of the provisions of any of the Bank Notes or of the Loan Agreement shall in any way impair or affect the foregoing terms. The provisions of this paragraph are for the sole and exclusive benefit of the holder or holders of the Bank Notes and shall not affect the rights and obligations of the Company and the holder of this note as between themselves.

The Company covenants and agrees that, subject to the provisions of the preceding paragraph hereof, it will duly and punctually pay or cause to be paid the principal amount of and interest on this note as and when the same shall become due and payable and at the place and in the manner provided herein.

Subject to the foregoing provisions, this note is subject to prepayment, at the election of the Company, in whole at any time or in part from time to time, at the principal amount thereof, without premium, and accrued and unpaid interest thereon to the date of such prepayment; provided, however, all prepayments of this note, and others of the same issue, shall be applied in such manner as to equalize the unpaid portion of the principal amount of the Notes originally issued to Pennsalt and the unpaid portion of the principal amount of the Notes originally issued to Olin,

and thereafter all such prepayments shall be made *pro rata* as between the Notes at the outstanding which were originally issued to Pennsalt and the Notes at the outstanding which were originally issued to Olin.

[fol. 1241] No failure or delay on the part of the holder of this note in exercising any right hereunder shall operate as a waiver thereof, nor shall any single or partial exercise of any such right hereunder prevent any other or further exercise thereof, or the exercise of any other right hereunder.

No recourse shall be had for the payment of the principal amount of or interest on this note, or for any claim based thereon, against any stockholder or officer or director, as such, of the Company.

In Witness Whereof, the Company has caused this note to be signed in its name by its President or one of its Vice-Presidents and its corporate seal to be hereunto affixed and attested by its Secretary or one of its Assistant Secretaries, all as of the day and year first above written.

Penn-Olin Chemical Company, By ——, ——, President.

Attest:

——, ——, Secretary.

[fol. 1242] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 184

Extract from—Policy and Planning Council Meeting No. 1

Date—January 6, 1960
Members—Messrs. Clark, Clem, Drake, LaLande, McPresent Whirter, Shanaman, Walker and Willits
Others—none
Present

III. Joint Ventures

a. Chlorates—Eastern Plant

Mr. Drake reported that this project is still alive and that it appears as if a joint venture is the only profitable way of doing it. Mr. Shanaman said a decision should be made as soon as possible because we are losing $80,000 per year on the 2,000 tons we give to Mathieson to hold a position in the Eastern market.

[fol. 1243] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 185

To: Mr. S. de J. Osborne at 460 Park Avenue
From: E. Block at Baltimore
Subject: Sodium Chlorate

January 22, 1960

Copy to: T. S. Nichols w/a
J. O. Logan w/a

The attached sheets were left with us by the Pennsalt group as to their ideas on a sodium chlorate plant. Pennsalt is completely mobile as to their ideas on location, marketing, etc., but do specify, as we agree, the plant, because of its high power consumption, must be in the T.V.A. area. We have another meeting with Pennsalt on February 11th and

before that time we intend to show you our own analysis of this picture as justification in moving forward. If we are in complete agreement on the February 11th date we would like to make a public announcement without delay.

E. Block

EB:hbd
Enc.

[fol. 1244] In United States District Court

Plaintiff's Exhibit 186

Pennsalt—Olin Mathieson: Sodium Chlorate
January 25, 1960
File
A. H. Clem
D11 L 14 2-X
Confidential

A meeting held in Olin-Mathieson's New York office Thursday, January 21st, to discuss the possibility of a joint venture between Pennsalt and O-M on sodium chlorate. Attending the meeting were Messrs. Ed Block and John Logan, of O-M, and Messrs. Drake, Land and Clem, of Pennsalt.

It was decided the following questions should be resolved prior to a second meeting to be held in Olin's offices on February 11, 1960, at 10:00 A.M.:

1. Plant Location—Is there a significant freight differential between Calvert City, Kentucky and Chattanooga, Tennessee?
2. Cell—What is the best sodium chlorate cell on a cost performance basis? O-M asked whether the Pennsalt cell is better than the Krebs cell.
3. Operations—After considerable discussion it was agreed that probably the best arrangement would be for Pennsalt to make the product and O-M to sell it. The possibility was suggested that Pennsalt might act as a sales agent in certain geographic areas. It was also agreed from an operational standpoint that John Logan would review the Sun-Olin venture to see if

this would be a pattern that might be followed from a legal standpoint in setting up this joint venture.

It was agreed that probably the best name for the new company would be the "Penn-Olin Corporation" or "Penn-Olin Chemicals Corporation."

It was also agreed that a decision would have to be reached on this matter in the next three or four weeks and, therefore, definite answers to the above items should be available by the February 11th meeting.

[fol. 1245] After returning to Philadelphia I asked Russ Sloan to make the freight analysis on Calvert versus Chattanooga and at least two other key cities in the southern United States. I then asked Al LaLande to determine as much information as possible regarding the best cell to be used in this joint venture. I believe the other questions raised at the meeting are matters of policy to be resolved between Messrs. Drake and Block.

AHC/eh

[fol. 1246] In United States District Court

Plaintiff's Exhibit 188

January 29, 1960

Mr. C. L. Williamson, Baltimore
J. G. McMullen, Baltimore
Sodium Chlorate Market Information

Messrs. J. G. Johns,
C. W. Frost,
W. W. Northgraves,
V. Woodside.

Confirming our recent discussion we are submitting preliminary market information with respect to Sodium Chlorate consumption. This study is confined to consumption in the Pulp & Paper industry only.

The attached tabulation lists all locations which are consuming Sodium Chlorate or have chlorine dioxide generating facilities under construction. Two columns of figures are shown: one indicating the annual consumption of

sodium chlorate on the basis of capacity operation of the chlorine dioxide generating facilities, and the other indicating our best estimate of annual consumption as of this date.

The foregoing figures have been developed by consultation with Walt Northgraves. His estimates of present consumption are based on all factors known to him. In some cases figures are derived from his intimate knowledge of actual chlorine dioxide production and in other cases estimates are derived by knowledge of total bleaching capacity, number of stages of chlorine dioxide bleaching employed, and estimates of percentage capacity operation.

I feel that Mr. Northgraves' estimates are the best available in this office within the limitations of the information available to him. However, as an additional check on consumption figures I am sending a copy of this presentation to Vernon Woodside with the request that he review the estimated consumption figures against his own estimates, calling on individual District Managers when necessary to supplement his own information.

By carbon copy of this memorandum Vernon Woodside is requested to make his comments and suggested revisions to Charlie Frost no later than Tuesday, February 2. Mr. Frost will then put together the entire picture and bring it to you for final determination of the consumption numbers to be used.

All concerned should be advised that no inquiries should be made to any potential consumers of Sodium Chlorate in connection with this study. This study is to be based entirely on information available to us within our own organization.

In view of the time limitations you have set we will have no opportunity to make any estimates of other applications for Sodium Chlorate beyond the pulp bleaching application.

J. G. McMullen

Enc.

[fol. 1247]

SODIUM CHLORATE CONSUMER'S PULP & PAPER INDUSTRY (EXCEPT FAR WEST)

1 T ClO_2 req. 1.28 T Chlorate

	Process Used	Annual Consumption - Tons: Estimated Actual Consumption	Annual Consumption - Tons: Based On Capacity Operation
ALABAMA			
Container Corp. of America - Brewton	OMCC	2450	3670
Coosa River Newsprint - Coosa Pines	"	1220	1840
Gulf States Paper Co. - Demopolis	"	2450	014 - 3670
Scott Paper Co. - Mobile	"	610 9170	15520 1840
International Paper Co. - Mobile	"	1220	1840
Marathon Paper - Naheola	"	1220	3060
		9170	15530
FLORIDA			
Rayonier Inc. - Fernandina	Solvay	610 014-3670	014 - 1840
Buckeye Cellulose - Foley	OMCC	2450	7340 3670
Hudson Pulp & Paper - Palatka	Solvay	610 SOL-1220	SOL - 920
St. Regis - Pensacola	OMCC	1220	2760 3670
		4570	10100
GEORGIA			
Brunswick Pulp & Paper - Brunswick	OMCC	3060 014-4590	014-5570 3670
Rayonier Inc. - Jessup	Solvay	3680	4900
St. Mary's Kraft - St. Marys	"	2140 SOL-5820	SOL-8570 3670
Continental Can - Augusta	OMCC	1530	1840
		10,410	14080
LOUISIANA			
International Paper Co. - Bastrop	OMCC	1220 014 -	014 - 1840
International Paper Co. - Springhill	"	3060 4890	7350 3670
Crown Zellerbach-Bogalousa Div.	"	610	1840
		4890	7357
MISSISSIPPI			
International Paper Co. - Moss Point	OMCC	3060 014 -	014 - 3670
International Paper Co. - Matchez	"	3060 6120	7340 3670
		6120	7340
NORTH CAROLINA			
Reigel Paper Co. - Acme	Solvay	3680 - SOL	SOL - 3670
Champion Paper & Fibre - Canton	OMCC	2450 - 014	014 - 3670
		6130	7340
VIRGINIA			
West Va. Pulp & Paper - Covington	OMCC	1530 - 014	014 - 1840
Union Bag-Camp Paper Corp.-Franklin	Solvay	2450 - 501	501 3670
		3580	
ARKANSAS			

Coosa River Newsprint - Coosa Pines	"	1220			1840	
Gulf States Paper Co. - Demopolis	"	2450		014 -	3670	
Scott Paper Co. - Mobile	"	610		1520	1840	
International Paper Co. - Mobile	"	1220	9170		1840	
Marathon Paper - Naheola	"	1220			3060	
		9170			15550	
FLORIDA						
Rayonier Inc. - Fernandina	Solvay	610	014-3670	014 -	1840	
Buckeye Cellulose - Foley	OMCC	2450		7340	3670	
Hudson Pulp & Paper - Palatka	Solvay	610	501-1220	501 -	920	
St. Regis - Pensacola	OMCC	1220		2760	3670	
		4570			10100	
GEORGIA						
Brunswick Pulp & Paper - Brunswick	OMCC	3060	014-4590	014-5570	3670	
Rayonier Inc. - Jessup	Solvay	3680			4900	
St. Mary's Kraft - St. Marys	"	2140	501-5820	501-8570	3670	
Continental Can - Augusta	OMCC	1530			1840	
		10,410			14080	
LOUISIANA						
International Paper Co. - Bastrop	OMCC	1220	014 -	014 -	1840	
International Paper Co. - Springhill	"	3060	4890	7350	3670	
Crown Zellerbach-Bogalousa Div.	"	610			1840	
		4890			7357	
MISSISSIPPI						
International Paper Co. - Moss Point	OMCC	3060	014 -	014 -	3670	
International Paper Co. - Matchez	"	3060	6120	7340	3670	
		6120			7340	
NORTH CAROLINA						
Reigel Paper Co. - Acme	Solvay	3680	- 501	501 -	3670	
Champion Paper & Fibre - Canton	OMCC	2450	- 014	014 -	3670	
		6130			7340	
VIRGINIA						
West Va. Pulp & Paper - Covington	OMCC	1530	- 014	014 -	1840	
Union Bag-Camp Paper Corp.-Franklin	Solvay	2450	- 501	501	3670	
		3980				
ARKANSAS						
Crossett Paper - Crossett	OMCC	610	- 014	014	-1840	
International Paper - Pine Bluff	Solvay	3680	- 501	501	-4900	
		4290			6740	
TEXAS						
East Texas Pulp & Paper - Evadale	OMCC	1530	014 -	014 -	1840	
Champion Paper & Fibre - Pasadena	"	1530	3060	3680	1840	
		3060			3680	

OLIN
C256-2
Johns

[fol. 1248]

SODIUM CHLORATE CONSUMERS

PULP & PAPER INDUSTRY (EXCEPT FAR WEST)

	Process Used	Annual Consumption - Tons: Estimated Actual Consumption	Annual Consumption - Tons: Based On Capacity Operation
MARYLAND			
West Va. Pulp & Paper - Luke	OMCC	1840	3060
PENNSYLVANIA			
Glatfelter Paper Co. - Spring Grove	Solvay	1840 501 –	1840 501 –
West Va. Pulp & Paper - Tyrone	"	1220 3060	1840 3680
		3060	3680
MICHIGAN			
American Boxboard - Filer City	Solvay	920	1840
WISCONSIN			
Nekoosa-Edwards Paper Co. - Nekoosa	Solvay	610	1840
MAINE			
Penobscott Chemical Fibre - Great Works	Solvay	1220	1840
Eastern Corporation - Lincoln	"	920 501 –	1840 501 –
Div. of Standard Packaging		3580	7357
Oxford Paper Co. - Rumford	"	1840	3670
(Under Construction)		3980	7357
NEW YORK			
International Paper - Ticonderoga	Solvay	610	610
OHIO			
Kraft Corp. (not incl in totals)	Solvay	2450	3150
		63,960	96,440

TOTAL - OMCC - 37,930 — OMCC - 57,590
SOLVAY - 26,030 — SOLVAY - 38,850

MARYLAND				
West Va. Pulp & Paper - Luke	OMCC	1840		3060
PENNSYLVANIA				
Glatfelter Paper Co. - Spring Grove	Solvay	1840	501 -	1840 501 -
West Va. Pulp & Paper - Tyrone	"	1220	3060	1840 3680
		3060		3680
MICHIGAN				
American Boxboard - Filer City	Solvay	920		1840
WISCONSIN				
Nekoosa-Edwards Paper Co. - Nekoosa	Solvay	610		1840
MAINE				
Penobscott Chemical Fibre - Great Works	Solvay	1220		1840
Eastern Corporation - Lincoln	"	920	501 -	1840 501 -
Div. of Standard Packaging			3580	7317
Oxford Paper Co. - Rumford	"	1840		3670
(Under Construction)		3980		7317
NEW YORK				
International Paper - Ticonderoga	Solvay	610		610
OHIO				
Mead Corp. (not incl in totals)	Solvay	2450		3150
		63,960		96,440

TOTAL - OMCC - 37,530
SOLVAY - 26,030

OHIO
OMCC - 57,530
SOL - 38,890

OLIN
C-256 = 3 last
Johns

9776

[fol. 1249] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 189

Pennsalt Chemicals

Subject: Sodium Chlorate—Eastern Pulp and Paper Markets
Date: February 1, 1960
To: Mr. A. H. Clem
From: R. W. Sloan

This summarizes our recent discussion of the freight study comparing Calvert City, Kentucky, with Chattanooga, Tennessee, as alternate producing points for sodium chlorate for the pulp and paper market.

As the attached chart and mill location map show, Calvert City is somewhat at an economic disadvantage in terms of freight costs compared with Chattanooga. Neither site compares favorably with the present producers in Mississippi: Hooker at Columbus and Am Pot at Aberdeen.

Although we considered the four or five permutations of the markets to be supplied from either Chattanooga or Calvert, we agreed that the optimum analysis lay in a consideration of the total Eastern market.

In the analysis of the Eastern market we assumed that sales would be evenly distributed throughout the market and in the same proportion as the installed capacity for chlorine dioxide bleaching. On this basis the "freight penalty" of Calvert would be $1.65 per ton higher than at Chattanooga. Assuming a 25,000 ton per year production and sale at Calvert the maximum freight penalty would be about $41,000 per year.

Significantly we do not include in this analysis the freight advantage that would be incurred by the production and sale of sodium chlorate from Calvert to other, non pulp and paper markets. For example, the tonnage sale of sodium chlorate for the weed killer market-rail right-of-way. Another qualitative example is the sale of some portion of the plant capacity as potassium chlorate to the match industry located in the geographic crescent extending from central Ohio southwestward to St. Louis.

[fol. 1250] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 190

Date: February 3, 1960.

Olin Mathieson Chemical Corporation
Inter-Office Memo

From: JGJ:bd
Subject: Sodium Chlorate Project

The following basis was used for determining the sales estimates furnished Mr. Williamson in the attached memorandum:

1. 1959 rates consumption as furnished by Mr. Northgraves for those destinations in Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, Virginia, Arkansas, Texas, Maryland, and Pennsylvania were totaled for Solvay and OMCC installations. This gave a total consumption rate of 38,000 tons per annum—OMCC design; 20,000 tons per annum—Solvay design.
2. We estimated that in the first year of operation (1962) we would be able to contract for 1/3 of the OMCC tonnage and 1/5 of the Solvay tonnage. Since there is a considerable difference in equalization to these various destinations between Calvert City and Chattanooga, this was reduced to 10,000 tons for the year 1962 to afford selectivity in freight absorption in event initial 1962 capacity was installed at 10,000 tons. A second estimate of 17,500 tons of sales for 1962 was given in event a decision is reached to install entire 25,000 ton capacity immediately. This estimate visualizes obtaining the maximum possible tonnage in the low freight absorption zones which would be supplemented by additional high equalization tonnage in the area not so favorable to Calvert City and Chattanooga.
3. For the year 1963 we estimated a total of sales of 20,000 tons, based on a 10% increase in consumption at those points we were already serving due to utilization of excess ClO_2 capacity already in place,

the remaining 9,000 tons increase to come from greater participation in the same accounts plus an expansion of our sales effort into areas of less favorable freight equalization to the extent required.

We estimated 25,000 tons of sales by 1963 as being possible should we make an initial decision to install 25,000 tons capacity immediately. This would require a maximum effort on our part and would require that we achieve near 50% of the tonnage required at OMCC designed plants plus 25% of the tonnage involved at Solvay designed plants within our natural marketing area. This also assumes a growth rate of 5% per annum in ClO_2 bleaching over the next five years compared with a growth rate averaging approximately 10%-12% per annum over the past five years.

To the extent that we might be unable to achieve our objectives in our natural marketing area, we would find it necessary to penetrate Pennsylvania, New England and Wisconsin markets at a reduced net return. On the other hand, if marketing factors in the Pulp Industry bring about a more rapid utilization of in-place capacity, we should be able to achieve our second year objective of 25,000 tons per year on a more favorable basis.

J. G. Johns

[fol. 1251] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 191

Confidential

Minutes of Meeting

Pennsalt-Olin Mathieson: Sodium Chlorate

Date: February 4, 1960
Time: 10:00 A.M.
Present: Olin Mathieson, John O. Logan, C. L. Williamson, Joseph Wood, Dr. William Gardner.
Pennsalt, Dr. W. A. LaLande, A. S. Woodard, E. H. Karr, W. K. Earnest, W. C. Willits, E. E. Tuttle, A. H. Clem.

The meeting convened in the Board Room with all of the above named in attendance. After proper introductions the first order of business was to discuss the project sales, earnings, return on investment and cash flow figures as developed by our engineering and accounting group. Olin Mathieson was in substantial agreement with these figures and felt that they were definitely in the ball park. They also agree with the incremental tonnages of 10,000 tons the first year, 20,000 tons the second year and 25,000 tons the third year of operation.

After this brief meeting the group split into two sections, one made up of the technical people present and the remainder of the group, consisting of John Logan, C. L. Williamson, W. C. Willits, E. E. Tuttle and A. H. Clem, reconvened to discuss the letter of intent and the legal and financial aspects of the joint venture. The minutes that follow pertain only to the discussions of this latter group.

The first matter discussed was the subject of plant location. Our freight studies were compared with theirs and it appears that Chattanooga has a freight advantage on shipments to customers of between $41,000 and $75,000, depending upon the actual location of the customers. The former figure assumes pro rated distribution throughout the entire markets of the paper industry east of the Rockies. The latter figure assume shipments in the south only which would more logically be served by a southern

chlorate facility. In contrast to this, Chattanooga has a $1.20 salt freight disadvantage, which on 15,000 tons of salt becomes $18,000. This means that the net freight advantage at Chattanooga is in the range of $23,000 to $57,000. We naturally indicated that the plant service facilities already available at Calvert would certainly more than offset the freight disadvantage. Olin Mathieson countered by indicating that they plan a facility at Chattanooga or nearby, [fol. 1252] which would have similar service to Calvert and, therefore, the PennOlin venture could purchase the service at that location probably as economically as they could at Calvert. We indicated we would certainly want a guarantee that such services were going to be available before thinking about any location but Calvert.

The next order of business was to review the letter of intent as proposed by Pennsalt versus that proposed by O-M. This led to a discussion of whether or not PennOlin was to be a "paper" corporation or an actual entity. O-M had been thinking the latter, whereas Pennsalt's letter of intent leaned toward the former. It was at this stage of the game that we entered into a lengthy discussion regarding the philosophy of the venture. Rather than dwell on the discussions themselves, the final conclusions reached were:

1. PennOlin should be permitted to pursue the field of chlorate chemistry, i.e., the project should not be restricted to sodium chlorate but should include other chlorates and derivatives therefrom.
2. The letter of intent should primarily be concerned with the agreement between Pennsalt and Olin Mathieson to establish PennOlin and then PennOlin should be the organization to decide process to be used, the plant location and the sales agent or agents to be employed. The letter of intent was therefore revised to permit this flexibility.

A. H. Clem

AHC/eh
Copies: D11 L9 T30 W1

[fol. 1253] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 192

NI 4-2680

Drake
2/4/60
D11-W1

1. OM Finance Plant
2. Pennsalt build & operate plant at a fee
3. OM sell output except to Chipman & Ag. Chem on which Pennsalt to get a commission on Sales
4. Pennsalt's fee to be based upon
   a) Capitalize "know-how" land & services
   b) 200,000/yr. mgt. fee
   c) % of any reduction in costs due to identifiable efforts on our part e.g., yields

Assuming we capitalize our investment (know-how & services). We should show a 25% return before taxes.

[fol. 1254] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 193

For Board

PennOlin Chemicals (?) Corporation

It has been proposed that there be established a joint venture between Pennsalt and Olin Mathieson for the manufacture and sale of sodium chlorate in the eastern United States markets. This would be a 50/50 venture with each company putting up minimum equity (approximately one million each on estimated total costs of $6,500,000—remainder to be borrowed from a lending institution. Pennsalt, with its chlorate manufacturing know-how would be primarily responsible for production, while O-M with its chlorine dioxide generator will be primarily responsible for sales to the pulp and paper industry.

Preliminary estimates have been made which indicate a

possible return on Pennsalt's investment in the subsidiary of better than 30%. Talks are in progress with O-M technical and financial people in an effort to get these preliminary figures, as well as the legal and financial matters, firmed up in order that a letter of intent regarding this joint venture can be executed. A meeting will be held in New York February 11, in an effort to finalize the intent stage. If this can be accomplished—public announcement will then be made immediately. Timing is of extreme importance because the market area considered can only handle one more significant producer at this time.

[fol. 1255] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 194

2/4/60

Market v Ft. Rencid -

① No barge movement of hauls
② T/c or T/t. - truck - Any a liz.
③ Pro rating over entire market (ALS.)

	Columbia	Chatt.	Calv.	
Total eastern	18.60	19.60	21.25	#41,250

Southern (map.) → #25600

④ Falt. - 3rd Calvert
4th Chatt.

15 mo
1.20

#18000
18000

PENN-OLIN
073 Logan
Logan

Jenn River rates

③ Pro rating over entire market (ALL)

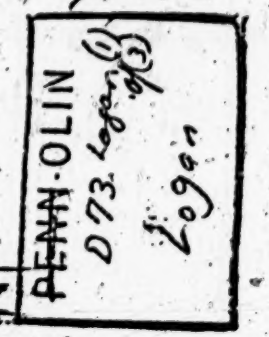
	Columbia	Chatt.	Calv.	over 25000 t.
Total Eastern	18.60	19.60	21.25	1.65 / $41,250

Southern (map.) ⟶ $75 000

④ Falls. - 3rd Calvert
4th Chatt.

150 000
1.20

$ Dallas
18000



Penn River rates

PS. prestige —

⑤ Charge for know-how — Sales

⑥ Letter of intent

$ - 1

$ - 2 — PS construct & run.

[fol. 1256]

Time to get into Opera. - Pennsalt call - ?
Vickers call ?

@ 6th Calvert -- Chattanooga.

P.S. - 16 mos. V.K. - 22 "

P.S. - 18 mos V.K. - 22

Announcement -

Problem of "one-sided-need"

PENN-OLIN
273(2)
E90.

Do Auditors' Bank not forced to [illegible] contingent liability ? ? ?

12 visiting days

Tech. Review

1-2 days per stop — 1. Visit { Penn Salt, Vickers, Krebs — { office, 2 plants }, Pechiney — — { 2 locs. engine — }

P.S. – 16 mos.
V.K. – 27"

P.S. – 18 mos.
V.K. – 22

PENN-OLIN
273(2)
2900

Announcement –

Problem of "one-sided-need"

Do Auto Bank note Forced to Pay Contingent Liability ?

Tech. Revised

12 visiting days

1-2 days per stop — 1. Visit { Penn Salt, Niches, Krebs — { office, 2 plants; Pechiney — { 2 locs.; Ugine — Swedes

2. Cell decision — up to 1 month

3. Build

Au + Ru team — W — each Co.

PX 194
CA 2282
11-1-61

[fol. 1257]

PENN-OLIN
D 73(3)
Logan

Startup 4th Q. — 1961

- Power —
- Quality — (Chromate)
- Labor
- Bldg. Size

→ Points which must be clarified.

[fol. 1258] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 195

Memorandum

Olin Mathieson Chemical Corporation
Industrial Chemical Research

Research and Development Department

Visit to Pennsalt Chemical Corporation
Three Penn Center, Philadelphia, Pa.
Telephone No. LO 4-4700

February 4, 1960

Present: W. Drake, President, Pennsalt
Cooper Willits, Pennsalt
Ed Tuttle, Pennsalt
Al Cl..n, V.P. Sales, Pennsalt
Dr. W. (Al) LaLande, Jr., V.P. Research, Pennsalt, (Home AD 3-4196)
Al Woodard, Engineering, Pennsalt
Errol Karr, V.P., Western Operations, Pennsalt
Ken Earnest, Manager, Tacoma, Pennsalt
J. O. Logan, OMCC
W. C. Gardiner, OMCC
C. L. Williamson, OMCC
J. L. Wood, OMCC

Copies of an economic evaluation made by Pennsalt on a 25,000 tons per year Sodium Chlorate Plant were discussed. The price of $NaClO_3$ (8.09¢/lb.) includes freight equalization on Columbus, Miss., assuming the plant production was shipped in equal amounts to all market points from Calvert City, Ky., No significant difference could be discovered from OM studies. It was agreed that two locations are to be considered, Calvert City, Ky., and Chattanooga, Tenn. Both locations would be "across the fence" from an operating plant. If at Calvert City then Pennsalt would be the operator while OM would be the operator at Chattanooga.

Interest in a Penn-Olin joint venture was expressed and

the representatives broke up into two groups, one to consider business matters and the other technical matters.

The technical group consisted of Messrs. LaLande, Woodard, Karr, Earnest, Gardiner and Wood.

Gardiner stated that OM had been interested in $NaClO_3$ for the past several years and had a turnkey proposal from Vickers-Krebs. Laboratory investigations on Pt-Ti anodes showed that chlorate could be made efficiently at low power cost but the durability and economics of the Pt-Ti are not yet sufficiently established for consideration at this time. A proposal from Pechiney was mentioned. Copies of correspondence with Pechiney is being sent to Dr. LaLande.

[fol. 1259] OM was presented with a "Summary of Chlorate Cell Characteristics" by Pennsalt. See copy attached. A copy of the V-K proposal was given Pennsalt at this time and compared with the Pennsalt data. The following differences were noted:

1. Pennsalt cells are 5000 amperes; V-K cells are 30,000.
2. Pennsalt uses chlorine and caustic for pH control whereas V-K uses HCl.
3. Chromic acid use is 0.5 lb/ton $NaClO_3$ for Pennsalt vs. 2.7 for V-K. Pennsalt gets pure white crystals whereas V-K admits that their product is slightly yellow. This may be a very important point.
4. Pennsalt has gas at $.40/1000 cuft. with oil standby at Calvert City. V-K assumed Bunker C oil.
5. Pennsalt uses 6300 KWH (ac) electrolytic energy compared to 6100 for V-K. Mechanical power of 200 KWH for V-K was considered too low by Pennsalt. They think that it should be around 400.
6. Pennsalt considers the V-K operating labor too low. They use 3.5 manhours per ton $NaClO_3$.

Two locations are to be considered. One is at Calvert City, Ky., adjoining Pennsalt's plant. The other is to be assumed as level ground at Chattanooga, Tenn., next to another OM plant which does not yet exist. OM has established salt costs to be $6.72/ton fob barge at Calvert City and $7.92 at Chattanooga. Pennsalt has a lower salt cost by their contract but for comparison, the above costs are to be used.

Pennsalt stated that they were very well satisfied with

their cell and process but recognized that all available cells should be considered objectively. Pennsalt management has directed that the new plant is to be a minimum cost producer.

The following timetable was decided upon as the time estimated to get in operation after unrestricted orders were given to proceed.

Pennsalt cells at Calvert City	16 months
Pennsalt cells at Chattanooga	18 months
V-K cells at Calvert City	18 months
X cells at Calvert City	22 months
V-K cells at Chattanooga	19 months
X cells at Chattanooga	22 months

[fol. 1260] Dr. LaLande carried this timetable in to the business committee and reported back that the technical committee should continue to consider evaluating all available cells except that of Electro Reduction Company because of their affiliation with Hooker.

The following cells and locations will be considered for visiting by the committee of Pennsalt and OM engineers:

V-K—Paris, Finland, Southern France
Pechiney—Paris, St. Auban (France)
Ugine—Paris, Southern France
Phosphat Fabrik A. G. (Sweden).

No contacts are to be made until the joint venture is consummated.

W. C. Gardiner, vd.

Enc.
WCG/vd
2/25/60

Distribution: J. O. Logan, C. L. Williamson, J. L. Wood.

[fol. 1261]

IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 198

Violetta Drake Block Clem Logan CLW 2/11/60

Conducted: Plant @ C City — Private

selling by ones.

Technical team: To proceed with investigation - ready to [illegible] to date

Press release - under

Derivatives - 1. Ann Chl.
2. Pot. Chl.
3. Pot perchlorate
4. Lith. perchlorate
5. Ammn perchlorate

and other agreed upon products

PENN-OLIN C67

Insert

A; Potassium chlorate, and perchlorates

P.S. will allow P.O. to use present [illegible]

~~Selling by OMCC~~

~~Technical team: To proceed with investigation~~ - Seek to be able to [illegible] to date

Press release - under

Alternatives - 1. Ammonium

2. Pot. Chl.

3. Pot perchlorate

4. Lith. perchlorate

5. Ammonium perchlorate

and other agreed upon products

PENN-OLIN
C67

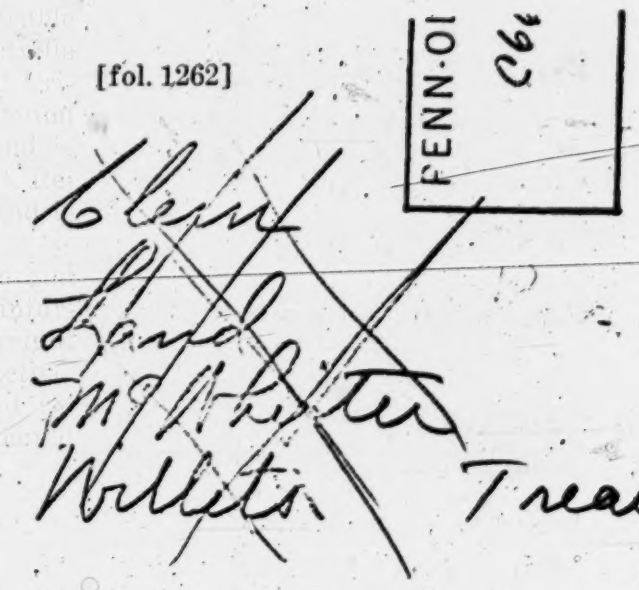
Insert

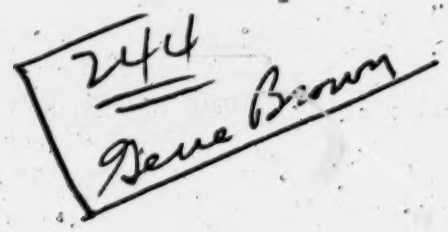
A, Potassium chlorate, and perchlorates

P.S. will allow P.O. to use present salt handling facilities

No cut of country - but minimum conflict.

[fol. 1262]





~~OFFICERS~~

Pres. McWHIRTER

V.P. J.O.L

~~V.P.~~

V.P.

Secy. WILLIAMSON

Treas. WILLETTS

OK

Board

1 J.O.L

2 @ L W

1. ~~M~~C WHIRTER James Cooper

2. WILLETTS

Rollins \ Reed

~~OFFICERS~~

Pres. McWhirter

V.P. J.D.L

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V.P.

Secy. Williamson

~~Secy~~

Treas. Willetts

OK

Board

1 JDL

2 CLW

3 JGJ

4 JLW

1. ~~Mc~~ McWhirter James

2. Willetts Copper

3. Clem OK

4. Land

Name: Penn-Olin Chemical Co, Delaware Corp.

OK

[fol. 1263] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 199

Pennsalt Chemicals

Subject: Penn-Olin Chemical Company
Date: February 12, 1960
To: File
From: William P. Drake
Copies to C20: L14: M44: W1

This morning in telling Fred Shanaman about the Penn-Olin arrangement, about which, incidentally, he was very enthusiastic, he indicated some concern regarding the appointment of Olin Mathieson as the sales agent for *all* chlorates. Fred feels that they are the natural agents for sale of chlorates to the pulp and paper industry. He does feel, however, that their lack of experience in the agricultural field in general, and the chlorates phase of this in particular, might warrant our pursuing the point we raised during our discussions yesterday, i.e., that in areas where we could do a better selling job we would in turn serve as Olin Mathieson's agent and, therefore, we would sell such chlorates as went into the agricultural chemicals field or the railroad weed-killing program.

I think this is something we should get on promptly and let's be sure to do so. Obviously, they won't have any chlorates to sell for some time yet, but the sooner we crystallize this, the better. I think Fred has a good point.

As an aside, just to show things can get fouled up by verbal communications, from the reports Fred got from Errol Karr, he was concerned that the appointment of Olin Mathieson might include the sale of all chlorates and perchlorates for Pennsalt and Penn-Olin, East and West. I assured Fred that this had no basis of fact; that we would continue to run our own show at Portland.

D.

WPD:m

[fol. 1264] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 201

Pennsalt Chemicals
Established 1850

Pennsalt Chemicals Corporation
Three Penn Center, Philadelphia 2, Pa.
Press Contact—Robert T. Mills LOcust 4-4700

PS-1554
For Release: A.M. Monday,
February 15, 1960

Pennsalt Chemicals and Olin Mathieson Announce Joint Chlorate Venture

Penn-Olin Chemical Company is now being formed as a joint subsidiary of Pennsalt Chemicals Corporation and Olin Mathieson Chemical Corporation, it was announced today by William P. Drake, president of Pennsalt, and Stanley de J. Osborne, president of Olin Mathieson.

The subsidiary, a $6,500,000 venture, has been organized to produce sodium chlorate and other chlorate compounds, and will be owned equally by the two corporations. Preliminary engineering has been completed, and construction is expected to start within 90 days on a 25,000-ton-a-year plant at Calvert City, Ky.

Pennsalt has produced sodium and potassium chlorate for many years at Portland, Ore. Recently it also built an ammonium perchlorate plant at the same location.

Olin Mathieson has pioneered the development of an efficient patented process for the generation of chlorine dioxide from sodium chlorate. More than 20 Olin Mathieson chlorine dioxide units are now in use in pulp and paper mills throughout the country, with their heaviest concentration in the natural marketing area of the new facility.

Sodium chlorate, in increasing demand from the pulp and paper industry, is also the major raw material used in the production of ammonium perchlorate, a solid rocket fuel oxidizer, and in the manufacture of defoliants and weed killers.

[fol. 1265] The board of Directors of Penn-Olin Chemical Company will consist of four members from each of the parent companies. Our members will be:

Albert H. Clem
W. Alfred LaLande, Jr.
James McWhirter
W. Cooper Willits

Officers of the new company will be:

President, James McWhirter, (Pennsalt)
Vice President, John O. Logan, (Olin Mathieson)
Treasurer, W. Cooper Willits, (Pennsalt)
Secretary, C. L. Williamson, (Olin Mathieson)

Headquarters of Penn-Olin Chemical Company will be at our offices here at 3 Penn Center, Philadelphia.

[fol. 1266] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 202

Subject: Sodium Chlorate
Date: February 17, 1960
To: All Salesmen
From: G. D. Grogan
Copies: B24, B29, G69, K48, M50, O4

You have all doubtless seen the notice in the papers about the forming of the Penn-Olin Corporation to build a Sodium Chlorate plant in Calvert City. Some of you will undoubtedly come across potential customers for Sodium Chlorate, and we might as well tell them right from the start that Olin Mathieson will be handling the sales end and we will handle the production.

I am extremely sorry that we won't be selling Sodium Chlorate because I think we could do a good job. Looking at it dispassionately, however, Olin Mathieson does have technical know-how and a patent position on chlorine dioxide bleaching which we do not have, and we have pro-

duction know-how which they do not have. Furthermore, there are a limited number of large customers, and there is no point in their organization and ours trying to sell the same material to the same people.

Even though this doesn't increase our sales opportunity, it should materially strengthen the Industrial Chemicals Division and this obviously works for our benefit.

GDG:k

G.

[fol. 1267] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 203

Extract from—Full Management Council Meeting No. 1
Date—February 18, 1960
Members Present—Messrs. Clark, Clem, Collins, Drake, Land, La-Lande, Lawson, Logue, McWhirter and Willits
Others Present—E. E. Tuttle

VI. Joint Ventures and Acquisitions

A. Penn-Olin

Penn-Olin

1. Some Council members stated that they had been asked several times what the reasons were behind the Penn-Olin joint venture.
2. The answer is that the venture is a perfect match, combining:
   - Our manufacturing know-how, with
   - The fact that Olin has a chlorate distribution organization in the South, and a patented chlorine-dioxide process for pulp bleaching which uses Sodium Chlorate.

[fol. 1268] IN UNITED STATES DISTRICT COURT

PLAINTIFF'S EXHIBIT 205

Pennsalt Chemicals

Subject: Penn-Olin—Chlorate Technology
Date: February 26, 1960
To: Mr. J. McWhirter
From: A. S. Woodard
Copies to E6, K5, L9, L14, M32, S12

The following men, designated to evaluate the chlorate technology available to the company from various sources and to recommend that which should be used in the construction of the plant at Calvert, met at the Portland Works of Pennsalt on February 22nd and 23rd.

Olin Mathieson: W. C. Gardiner, J. Wood
Pennsalt Chemicals: E. H. Karr, A. S. Woodard

The purpose of the meeting was to provide the group with detailed knowledge of the Pennsalt technology and to provide opportunity for discussion with Pennsalt experts in chlorate technology at Portland significant factors useful in comparing our technology with that of others.

Mr. More had assembled at Portland for the full two days of the meeting Messrs. Earnest, Heitman, Istas, Werth, Locke, and Waterman and was himself present for the first day. Preparation for the meeting by Pennsalt of Washington Division personnel was excellent in all respects and contributed greatly to the facility with which the desired information was presented. There was repeated inspection of the chlorate plant as well as discussion.

We are convinced from the discussions at Portland and the subsequent discussions during the return East, that Messrs. Gardiner and Wood of Olin-Mathieson were impressed with the fundamental soundness of the Pennsalt technology, the operating skill as indicated at Portland, and feel that competitive technology will not likely show any substantial superiority and will, therefore, probably be most difficult to competitively evaluate. Both Gardiner and Wood, however, are firm believers in the general advantage

of large cells. In this instance, the feeling is that cells of the order of 15,000 to 30,000 amperes should have some advantage. Nevertheless, advantages in simplicity and facility [fol. 1269] in handling of the 5,000 ampere Pennsalt cell were strongly demonstrated at Portland. We were somewhat surprised at the detailed information requested by Olin-Mathieson personnel, particularly with regard to the process area. This included not only process information, such as stream analysis, but also equipment manufacturers and materials of construction. Subsequently, it was learned in talking with them that Olin-Mathieson has underway a two-year program to develop a 30,000 ampere cell based upon the use of platinum coated titanium anodes. The development cell for this program (a small cell) has operated quite well and offers considerable promise. However, they have experienced great difficulty with the processing or recovery side of the process and these difficulties have impeded the work on the cell. It is possible that they have learned enough in the visit at Portland to facilitate the development program. This program has not been stopped by Management (Mr. Block). Further, it was learned that Mathieson was about to enter into an agreement with Krebs under which Mathieson's continuing development work on chlorate would be combined with Krebs' general process as well as cell knowledge.

It seems likely that there will be questions and problems to be resolved eventually with regard to the independent development work on chlorate by Pennsalt as well as Olin-Mathieson. It is possible also that we should consider some acceleration of the cell development work initiated by Olin-Mathieson and substantially complemented by Pennsalt's experience with platinum covered titanium anodes since this work might well be applied in the second and third stages of the Penn-Olin plant even though this would be impractical under the present schedule for the initial installation.

A. S. Woodard

asw:jh